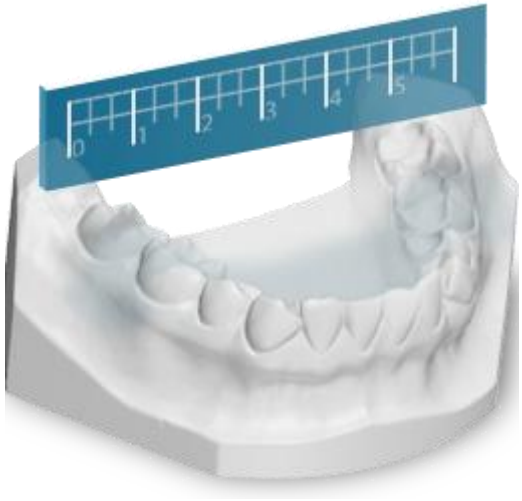
OrthoAnalyzer 2012



User Manual

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Preface

OrthoAnalyzer is an advanced 3D analysis and measuring software package for orthodontists to facilitate fast and easy 3D analysis as well as advanced treatment planning from digital study models.

This manual introduces the OrthoAnalyzer software's functions.

From herein, it is assumed that the OrthoAnalyzer user is familiar with basic orthodontics terms and concepts.

OrthoAnalyzer 2012 IMPORTANT INFORMATION AND LEGAL DISCLAIMER

The functionality of the OrthoAnalyzer™ software allows you to manipulate a 3D visual model of a patient's dentition by dragging and moving individual teeth in the model, such that you may explore how the visual appearance of the dentition may change if such tooth movements were implemented.

Please be informed that the OrthoAnalyzer™ software does not in any way attempt to check if any specific tooth movement or combination of tooth movements visualized in the software is actually possible to implement on the patient in real life.

Manipulations visualized in the software may not be possible to implement in real life, e.g. because the teeth may not actually be moved as visualized. A visualization created in the software of any tooth movements may also be inaccurate, e.g. because such movements, if implemented in real life, might cause more or different effects than as shown in the visualization created within the software.

Furthermore, the software does not contain any functionality attempting to check whether any such real-life implementation attempt might result in damage, e.g. to the patient's teeth or jaw. Any treatment attempt to implement on a patient a tooth movement or other manipulation visualized by way of the software should be planned and made only by a dental professional having with due diligence assessed whether the visualized manipulation can actually be implemented without causing damage to the patient.

The risks pertaining to any such treatment attempt shall be assumed entirely by the person carrying out the treatment.

3Shape A/S disclaims any and all liability for the results of any treatment attempts made on the basis of the visualizations generated within the OrthoAnalyzer™ software.

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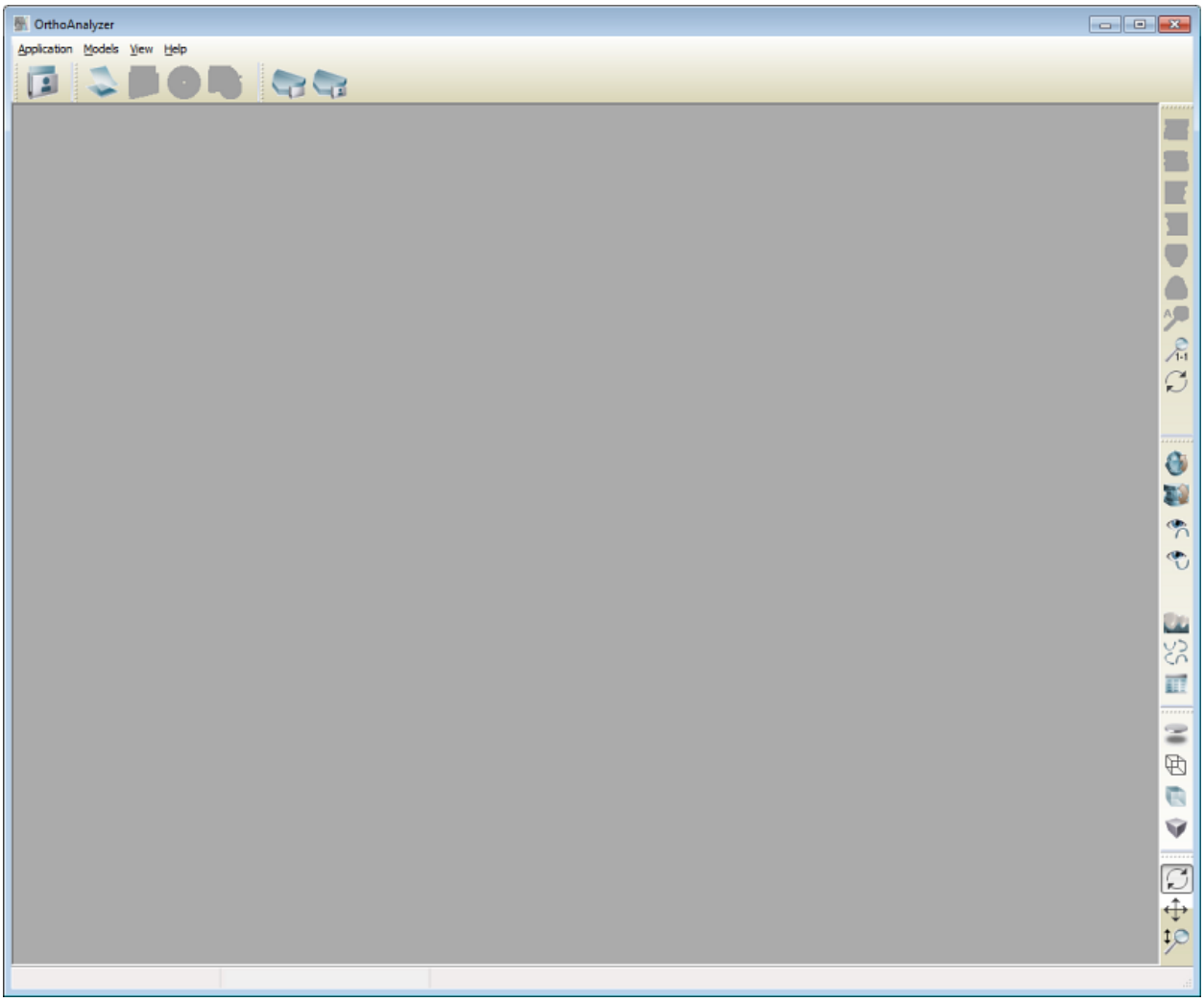
1 Getting Started

This section describes the principles of managing the orthodontic models in OrthoAnalyzer™ .

The chapter is divided into three parts: the first part is about a new patient entry, the second is for working on already created cases, and the third is for running an independent session with no patient database attachments.

1.1 Executing OrthoAnalyzer™

OrthoAnalyzer™ is started by double-clicking the OrthoAnalyzer™ desktop icon or via the Windows™ Start menu: *Start* → *Programs* → *3Shape* → *OrthoAnalyzer*. When the application starts, the following screen appears.



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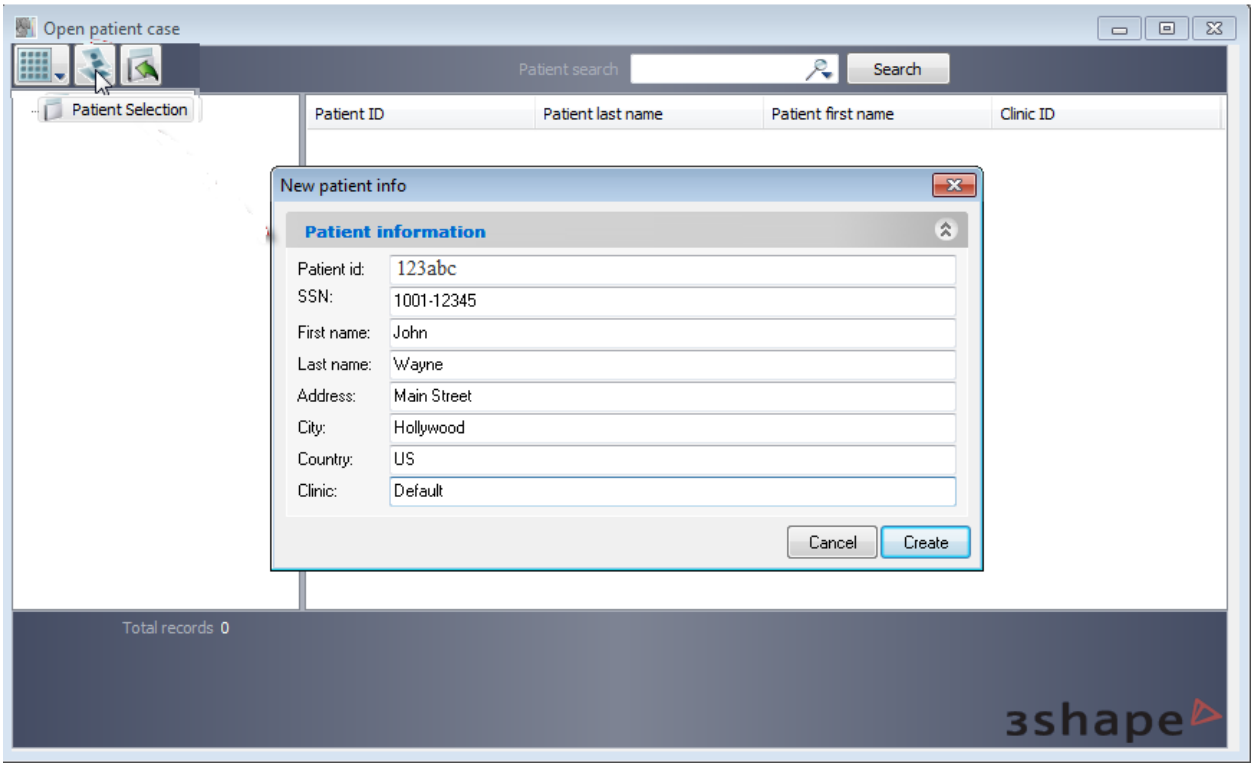
1.2 Creating a New Database Entry

1.2.1 New Patient

Before starting an analysis session, a patient database needs to be created. To create a new patient, click on the ***Patient model set*** button in the Main toolbar and select ***New patient***. A *New patient info* form will pop up.



The fields in the form contain administrative and personal data of the patient for whom the order is created.

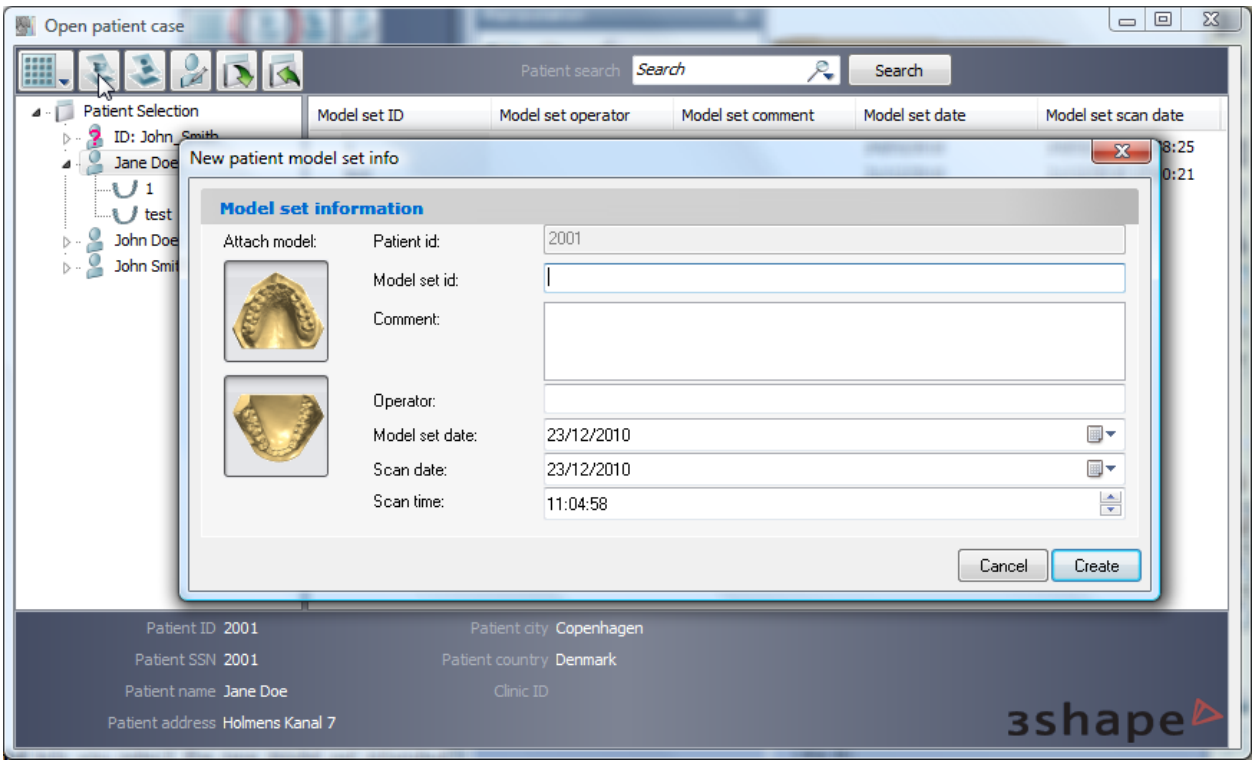
A few of the fields are explained below:

- **Patient ID** – This field is reserved for the patient's unique ID. It is a manually maintained string of alphanumeric symbols.
- **SSN** – Stands for the patient's Social Security Number.
- **Clinic** – A description string for the clinic the session is being held for and is made for the scanning centers. To use this option the clinic and its data have to be previously registered in Orthodontics Control Panel.

Click ***Create*** to save the data entered.

1.2.2 New Model Set

This step creates a new model set for the current patient by letting you fill in a small dialog box. Click the ***New model set*** button to get the *New patient model set info* window:



The section **Attach model** lets you select the new model set intended for import. Click ***Create*** to save the entered data. The description of the fields in the form is provided below:

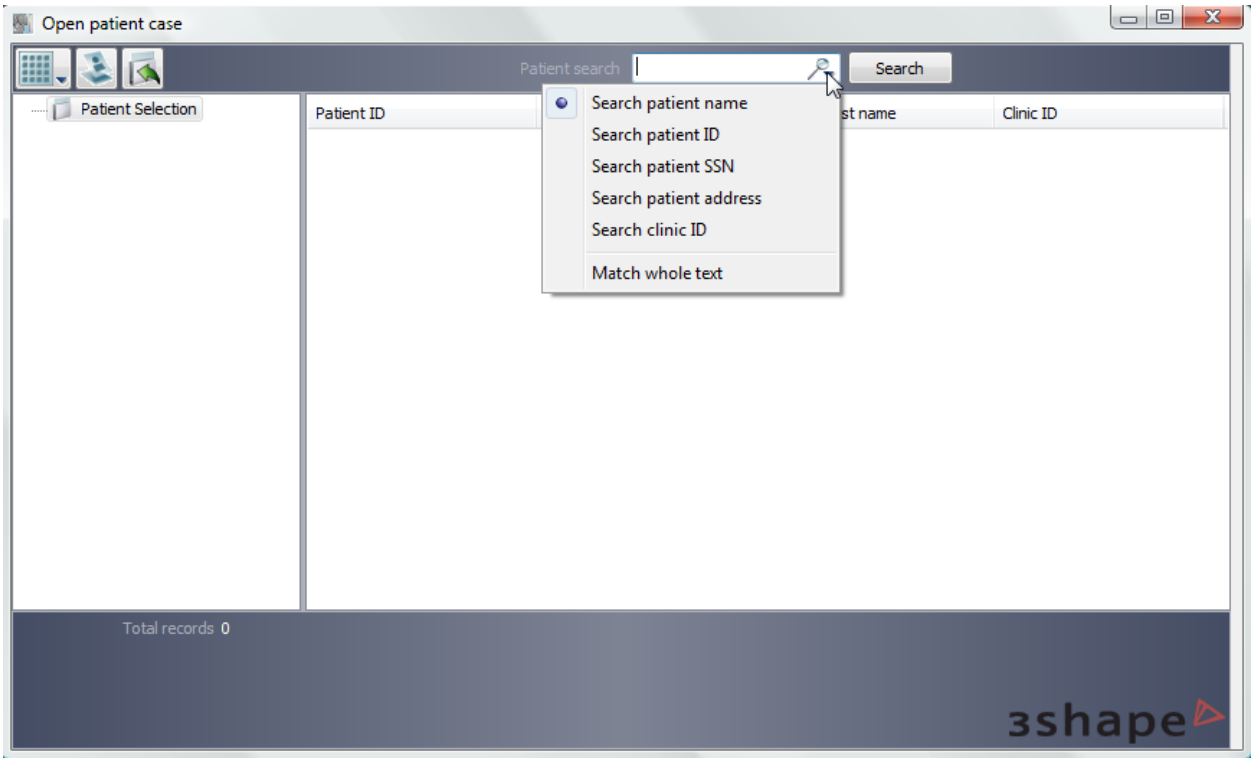
- **Model set ID** – Corresponds to the ID string that uniquely identifies the model set for a particular patient.
- **Comment** – Any comments related to the order or the model can be added here.
- **Operator** – Fill in the name or the code of the operator performing model set analysis.
- **Model set date** – The date the model was created (the default date can be modified).
- **Scan date and Scan time** – The Date and time the scan was taken (the default date and time can be modified).

Note: The information specified in **New patient** and **New patient model set** appears at the bottom left corner of the session window for reference.

1.3 Returning to the Database Entry

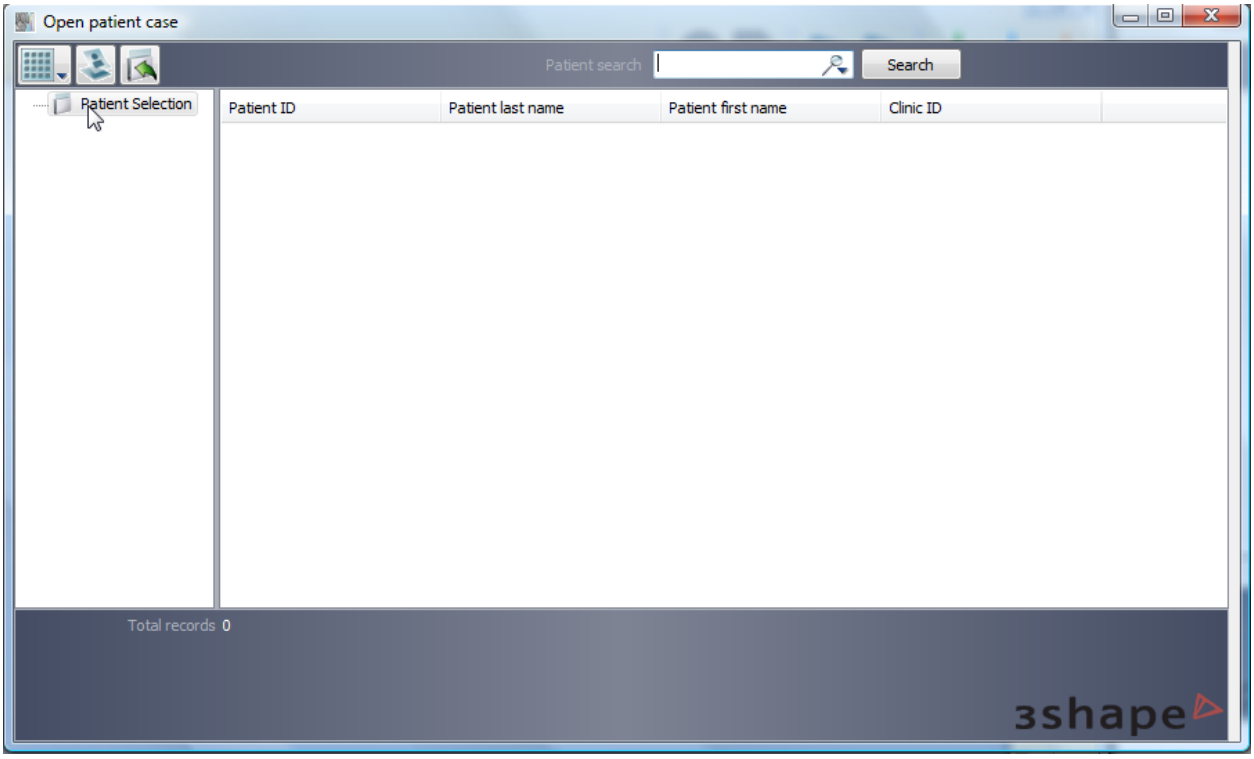
1.3.1 Patient Model Set

Another option to start analysis session is to open an existing patient model set by clicking the ***Patient model set*** button in the Main toolbar. Then the empty *Open patient case* window pops up suggesting to search for a patient.

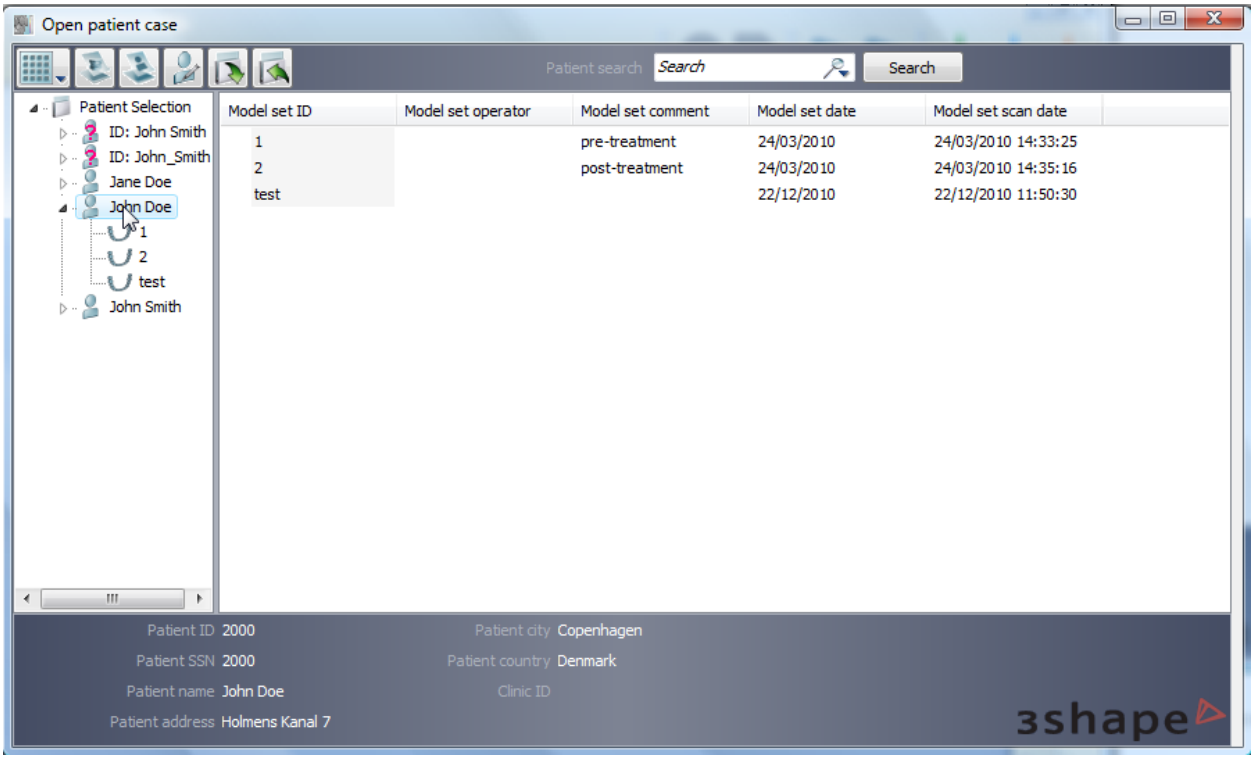


- To view model sets for inspection, search for them using the search bar in the right corner of the window, which includes various criteria to search with for the necessary patient model set(s) (e.g. patient's ID or address).
- To see all available model sets set in the Control Panel, click ***Search*** leaving the search bar blank. A list of patients sorted by their IDs will appear under **Patient Selection**, which would offer model set(s) for further inspection.
- The system employs several indications displayed in the main window to help you look for the necessary model sets in the catalogue:

a) Clicking on the root of the **Patient Selection** tree will display patients' IDs and names.



b) Clicking on one of the patient ID (name) in the catalogue will display the ID, operators, comments, model set dates and scan dates associated with all the model sets for the patient ID selected.



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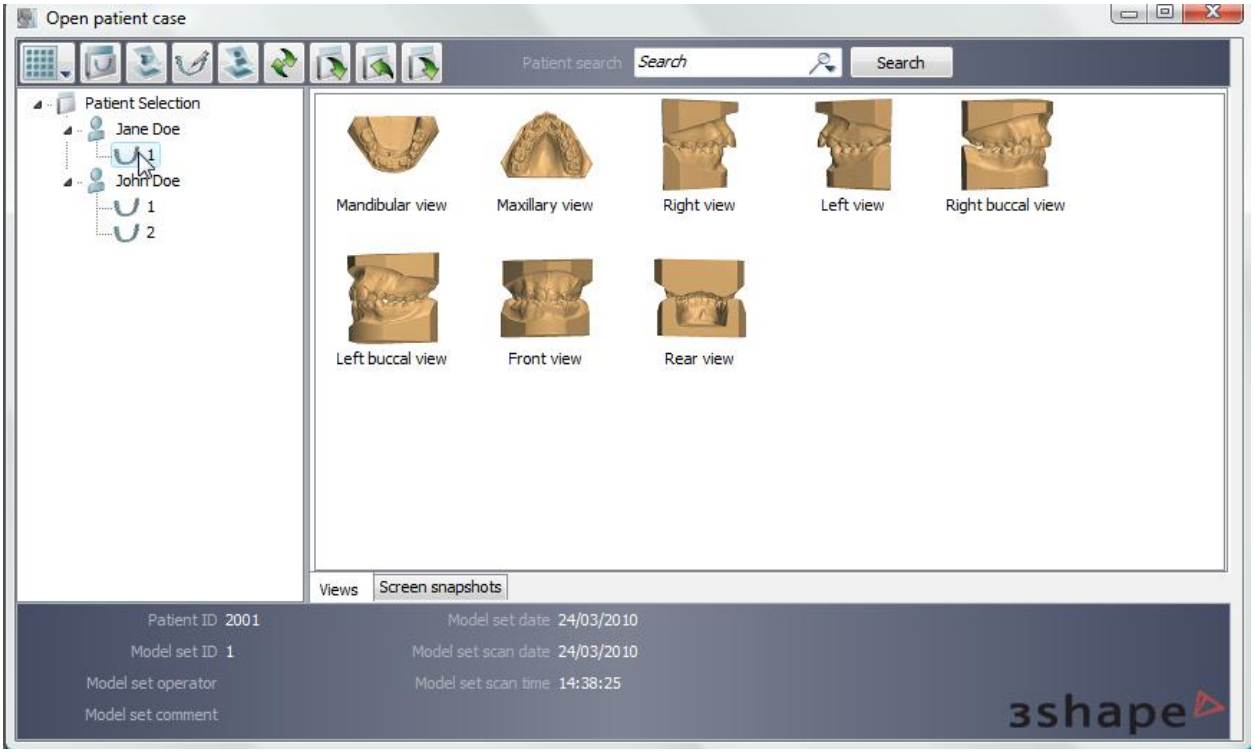
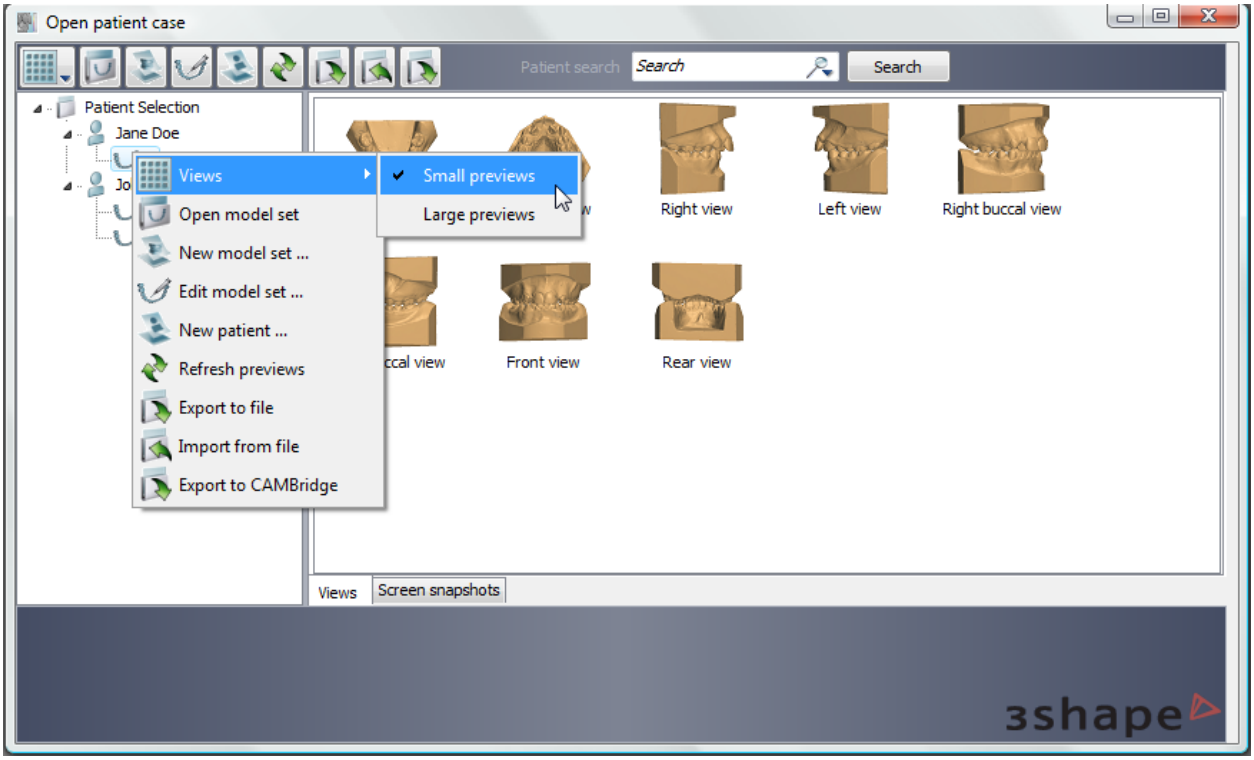
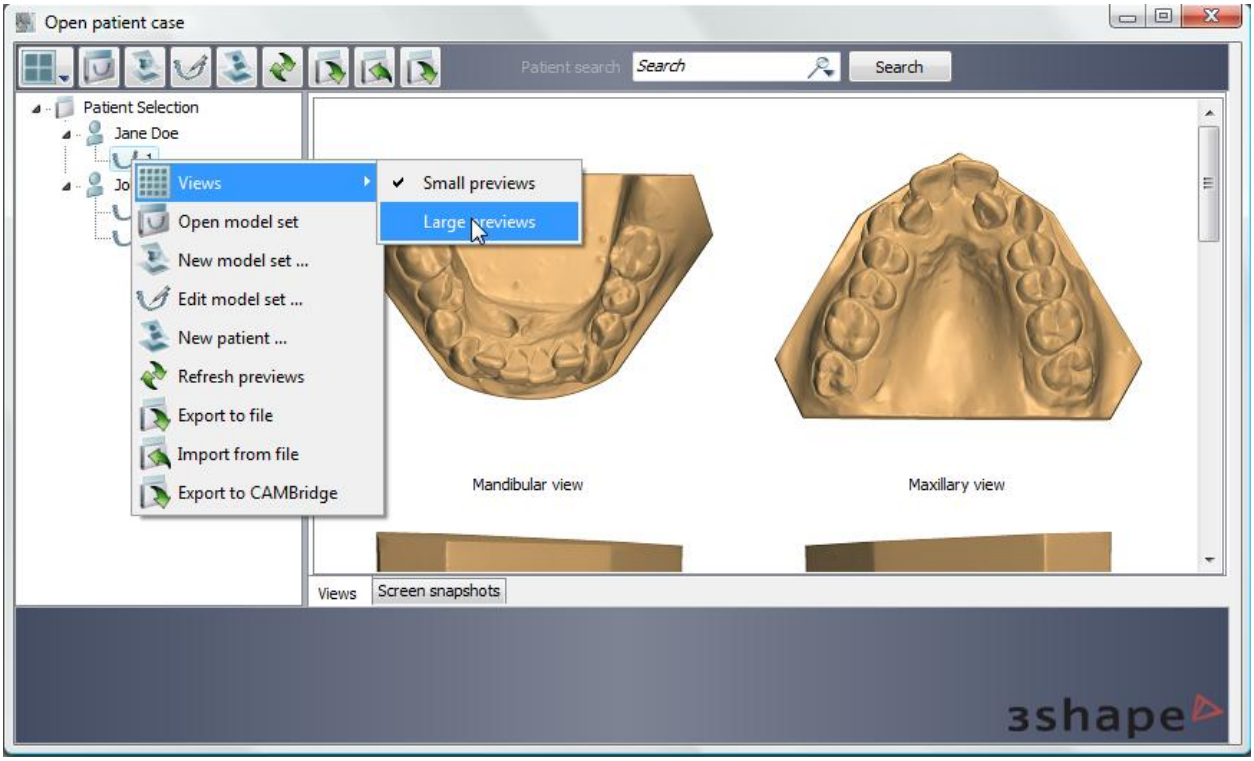
c) Unfolding the patient model set tree further and clicking on one of the model IDs (e.g. 1002-1), representing the selected model set, will display seven views corresponding to this particular model.



NOTE: There are two preview options available at this stage: small previews and large previews. Click on the ***Views*** button on the top toolbar to select the most convenient viewing option.





- Throughout advancing to the last node of the selection tree, the system assists you in tracing the order selection, as well as in managing the active selection with available options. There are two sections in the window which perform this task:

1. The dark grey field at the bottom of the window summarizes the information related to the active selection.
2. The top toolbar window modifies its content according to the active selection:

a) While you are at the **Patient selection**, the only option available at this stage is:

New patient creates a new patient in the patient database (see chapter New patient).

Import from file button permits to import models from other folders.

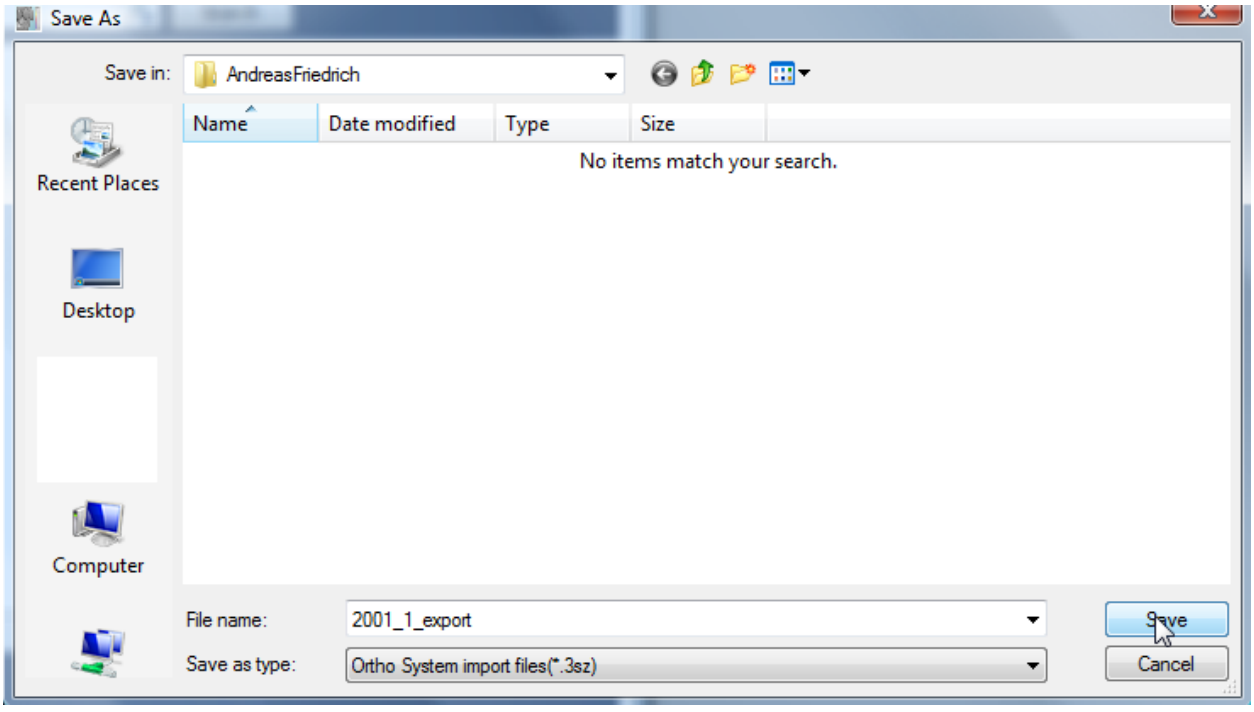
b) Selecting a **patient model set** adds two additional buttons:

New model set allows you to create a new patient model set for the selected patient (see chapter New model set).

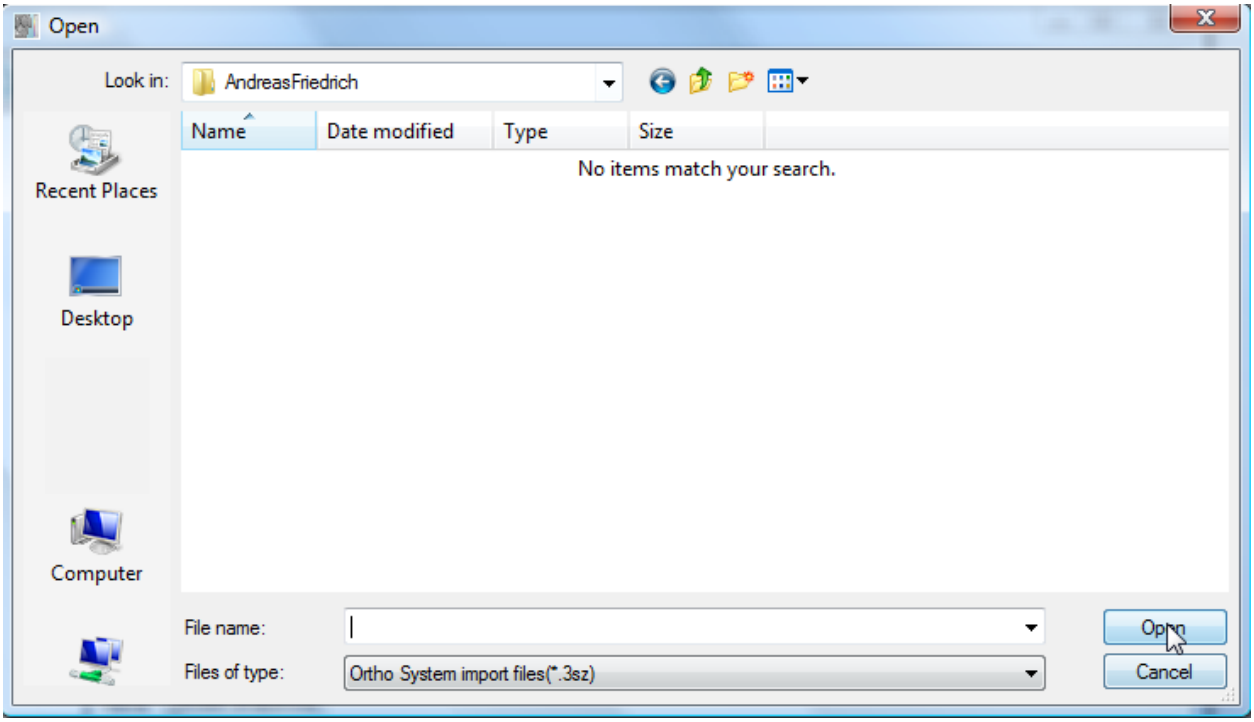
Edit patient... button opens the existing patient information form of the selected patient for editing. Click ***Change*** to save changes.

Export to file allows you to save the selected file in the selected folder.

When you select the ***Export to file*** button you will open the window, where you can select the folder where it will be exported to. The format for the exported files is .3sz.



Selecting the ***Import from file*** button opens the Import window, where you can select the folder the file will be imported from. The format for imported files is .3sz.



c) Selecting a **patient case** adds two new buttons designed to help with managing an individual model:

Open model set button produces just the same effect as a double left-click on the selected model, i.e. it submits the selected model to the analysis process opening it in the session window.

Edit model set... button opens the existing patient case information form and suggests editing the fields which were previously filled in. Click ***Change*** to save changes.

Refresh previews refreshes visualization of the settings changed in the Ortho Control Panel.

Export to CAMBrigde lets you open the preview of the selected model.

When you select the ***Export to CAMbridge*** button you can observe the preview of the selected model in the *Model preview* window.

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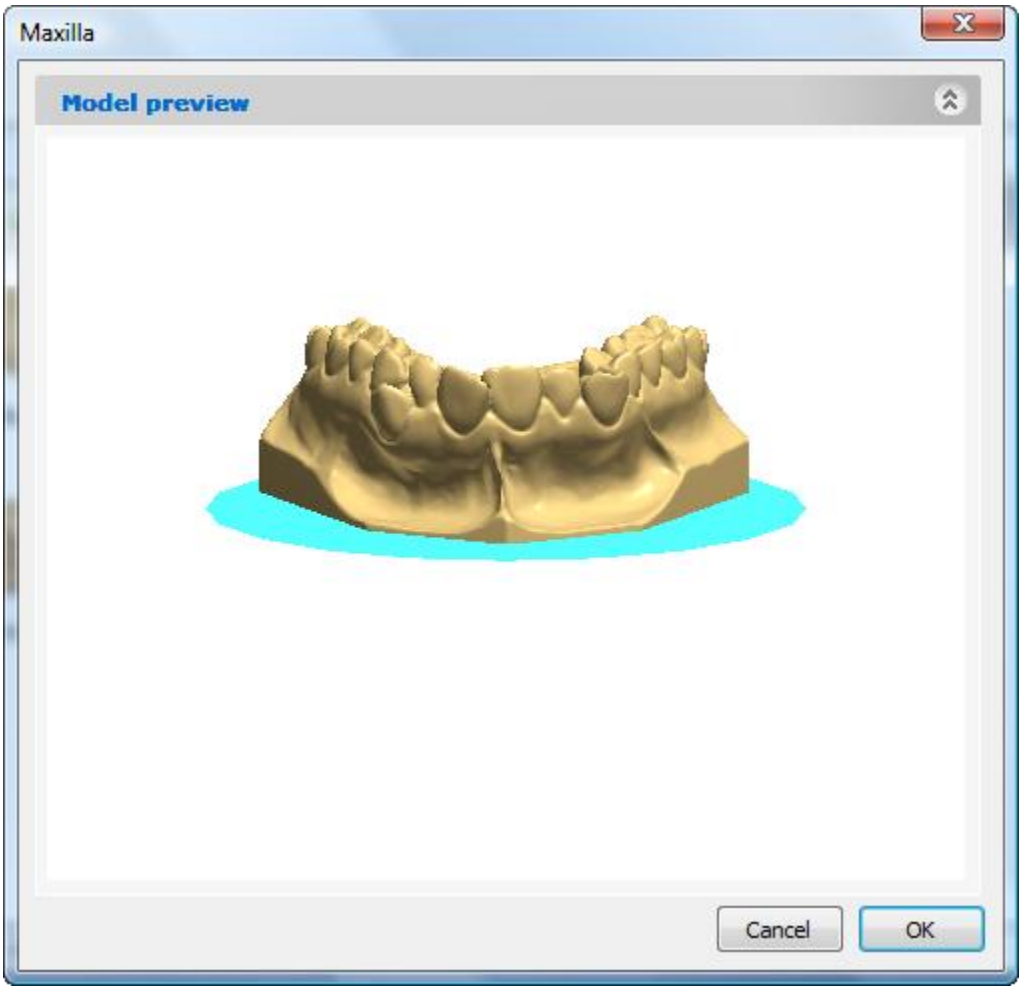
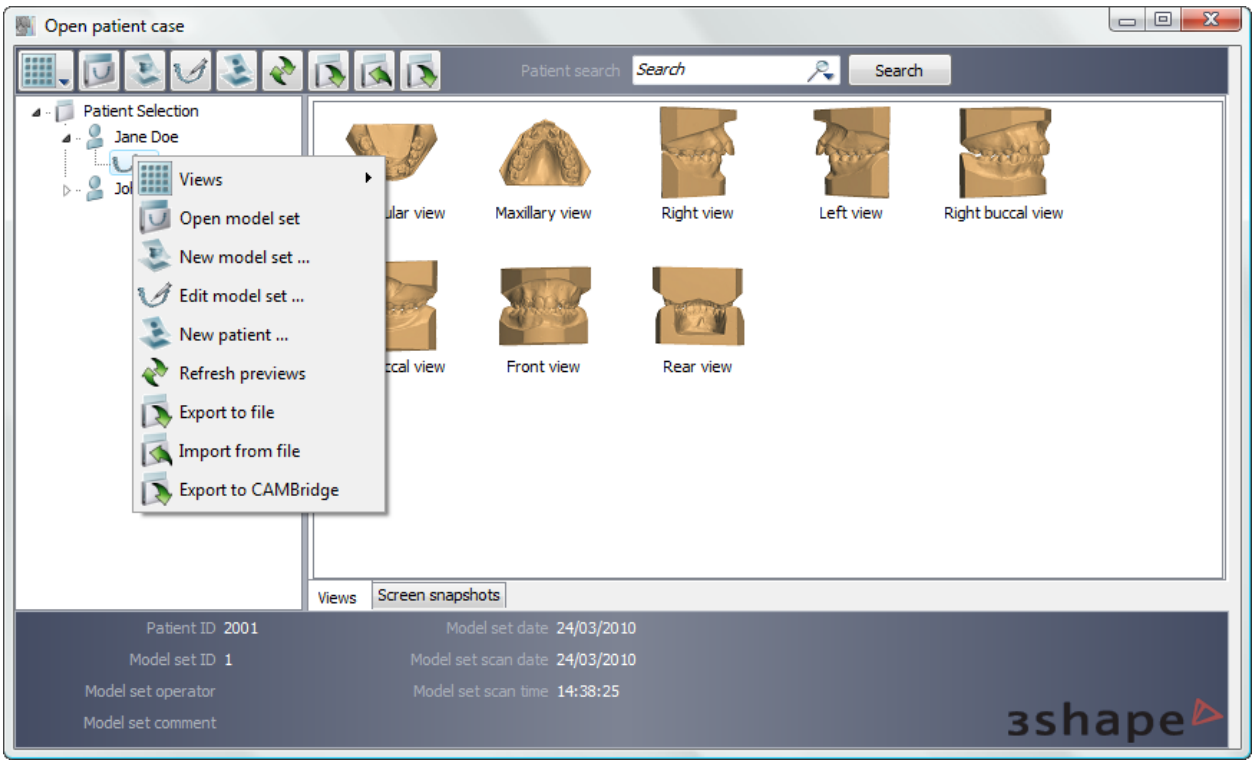
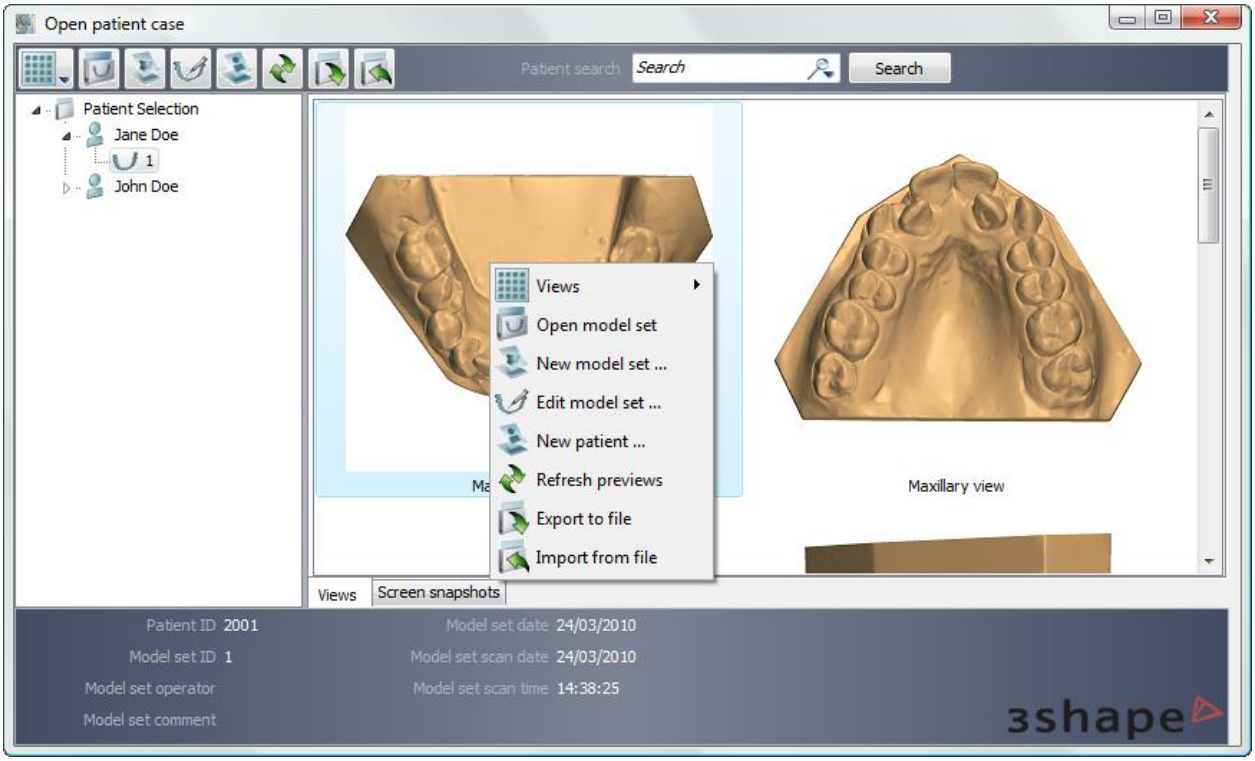


All of the options described above may also be accessed by right-clicking on the active selection label (top) or image (bottom):





1.3.2 Open Model Set

In order to complete this step, it is required that there is a patient case created (see chapter New Patient). Having opened a patient model set in the session window (see the

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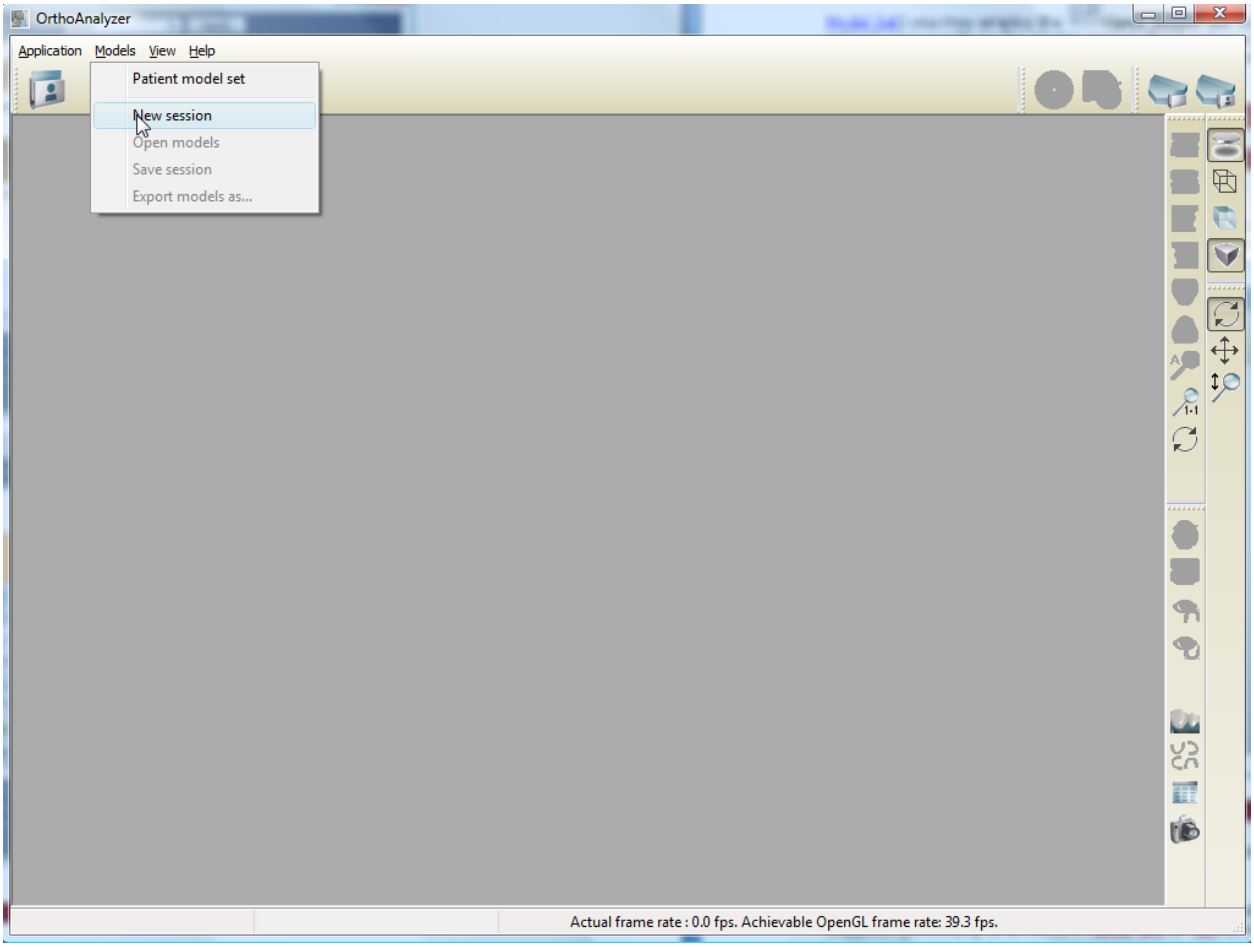
chapter Patient Model Set) you may employ the **Open model set** option to see the record of just the patient case specific to the model opened. The function is provided in order to open a different model set for the same patient and to compare models while making a complete analysis of a single model set.

1.4 Starting an Independent Session

1.4.1 New Session

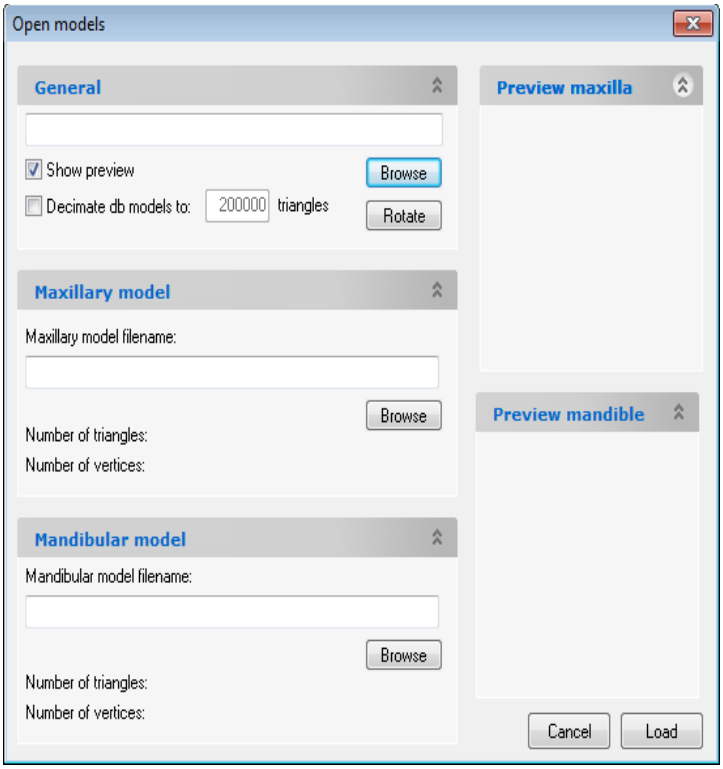
Model sets can be created using the **New session** function. A new blank session window will appear with the main toolbar suggesting loading scans in .dcm or .stl format to start a new analysis session outside of the patient database system.



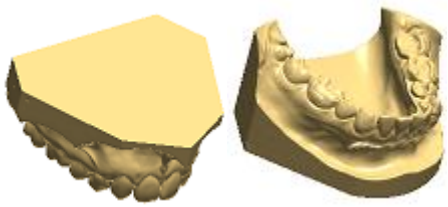
1.4.2 Open Models

To start an analysis session it is first necessary to open existing models for inspection.

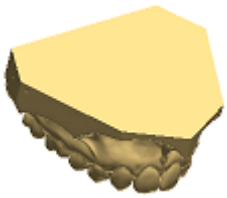
Step 1: Click **Open models** in the Main toolbar. The empty *Open models* window pops up suggesting browsing for a model in **.dcm, wrl** or **.stl** formats.



General:
Select either of the 2 models to automatically locate the complimentary model and open the model set.



Maxillary model:
Choose a maxillary model only, to load into the system.



Mandibular model:
Choose a mandibular model only, to load into the system.

Step 2: To browse for a model set in the Orthodontics Control Panel, use the *Browse* buttons under each of the blank fields. The default path to the folder with files of the patient database is C:\Program Files\3Shape\OrthoData.

- You may browse exclusively for the maxillary or mandibular models using the **Maxillary model** or **Mandibular model** fields of the window.
- If both parts of a model set are required, then it is possible to either select them using the option described above or to browse for any of the two models in the **General** field. The system automatically locates the pair model in the same folder to form a properly occluded double-cast for further inspection.

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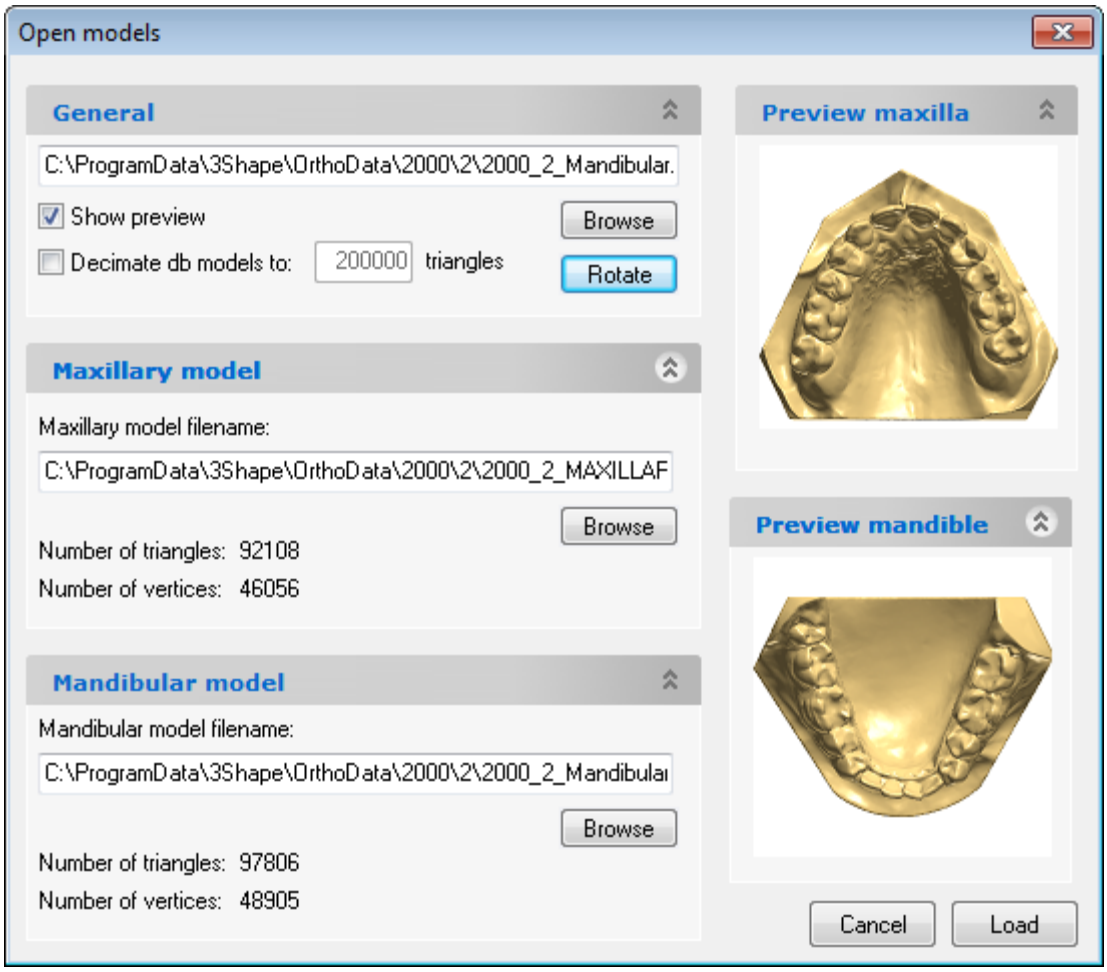
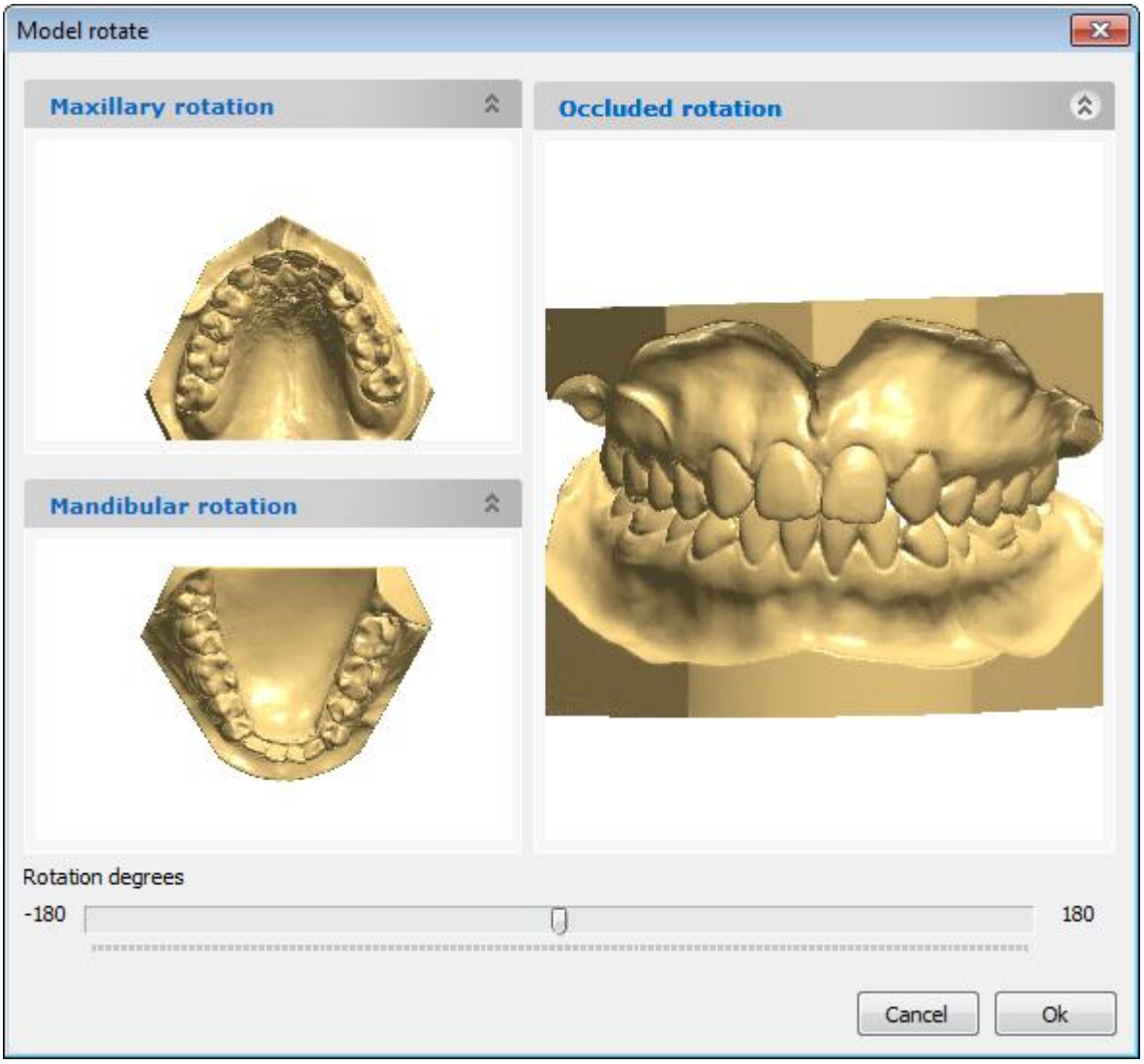


Step 3: Check **Show preview** to see the selections made in the preview boxes to the right of the window.

Step 4: Check **Decimate db models to...triangles** to decrease the number of triangles on the model to a predefined value.

Step 5: Click ***Rotate*** to set the appropriate rotation angle for the relational positioning of the maxillary and the mandibular models. In the new window which pops up immediately after you push the ***Rotate*** button, move the **Rotation degrees** sliding bar (minimal value being -180°, maximal 180°) to bring the rotation angle to the necessary value. View the changes made in the preview boxes provided, to help you to control the maxillary, mandibular and the occluded modes rotation.



Step 6: Click ***Load*** to display the selected model(s) in the session window and start the analysis session.

2 OrthoAnalyzer User Interface

The user interface comprises of the following four sections as indicated on the image below:

1. **Main toolbar**
2. **Visualization toolbar**
3. **Functional panel**
4. **Session window**

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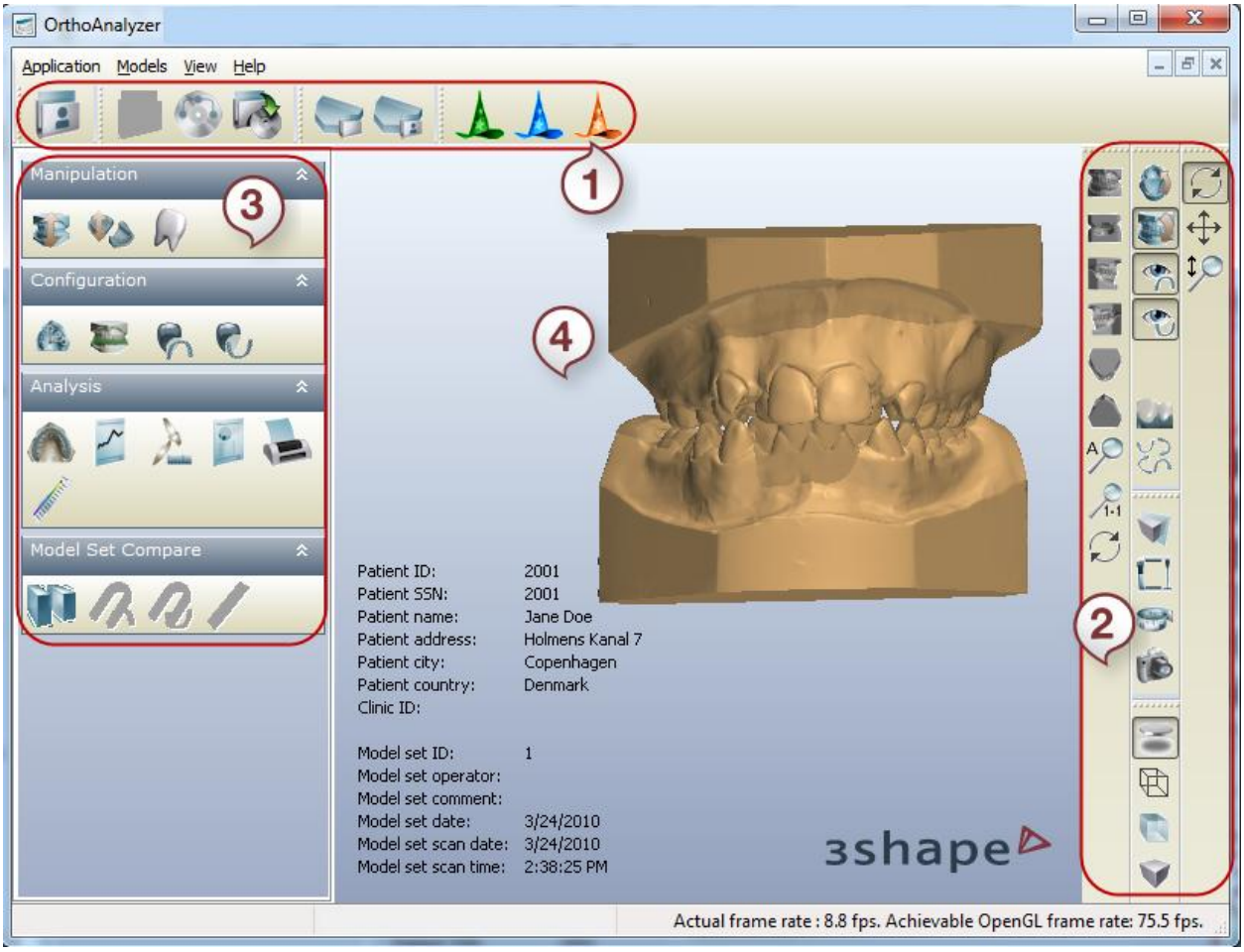

A detailed description of these is provided in the following sections.

2.1 Main Toolbar

The Main toolbar contains functionality relevant to managing the analysis and the modelling processes:

Item	Action
	Patient model set – Loads previously created patient model sets from the patient database.
	New session – Starts a new analysis session on a model set which is not attached to any patient.
	Open models – Opens model(s) required for inspection and imports them into the system.
	Save session – Saves the current analysis session to default file.

	Export models as.. – Saves the current analysis session to the selected file.
	Create virtual base – Starts the utility designed for the virtual base modelling on the model set not attached to the patient database.
	Open patient model set in virtual base – Starts the utility designed for the virtual base modelling inside the patient database.
	Preparation – Is a customized workflow wizard that contains the following default steps: Occlusion, Alignment for open model set, Setup local origo on maxillary model, Setup occlusion plane, Preparation for maxillary model, Preparation for mandibular model.
	VirtualSetup – Is a customized workflow wizard that contains the following default steps: Dental arc analysis and Move Teeth.
	Analyzer – Is a customized workflow wizard that contains the following default steps: Analysis objects, Overbite/Overjet, Dental arc analysis, Analysis reports and Generate Report.

Note: The customized workflow wizard let you create or edit your own workflows in order to adapt OrthoAnalyzer to your particular needs. The wizards are customized under the *Workflow Settings* of the Ortho System Control Panel.

2.2 Using the Mouse and Keyboard

The use of the mouse and keyboard for common functions in OrthoAnalyzer is identical to the Windows applications.

The use of the right mouse button is mostly restricted to 3D-specific operations. The default setting in OrthoAnalyzer allows you to use the right mouse button to rotate and zoom the models in 3D view or to pan in 2D view. The configuration can be changed by clicking the ***Rotate view***, ***Pan view*** or ***Zoom view*** buttons in the Visualization toolbar or by using the keyboard shortcuts shown in the table below.

Visualization toolbar button	Corresponding key	Action
Pan view	**ALT**	Press the right mouse button and drag mouse to pan the view.
Rotate view	**CTRL**	Press the right mouse button and drag mouse to rotate the view.
Zoom view	**SHIFT**	Press the right mouse button and drag mouse to zoom in and out.

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The preferred working practice is to have the ***Rotate*** view button of the Visualization toolbar pressed while using the mouse wheel to perform panning and zooming of the view as described in the table below. Some functions of the Visualization toolbar are purely mouse functions.

Mouse wheel	Action
Pressed	Move the mouse in the 3D view to **pan**.
Scrolled	Scroll mouse wheel in the 3D view to **zoom in** and **out**.

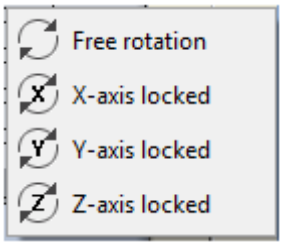
2.3 Visualization Toolbar

Finding the right point of view to work on a 3D model most effectively can be difficult and time-consuming. OrthoAnalyzer comes with a set of tools aimed at helping you find the most advantageous visualization. The visualization tools are grouped in the Visualization toolbar and allow to:

- **Rotate the 3D view** to a preset angle: this allows you to view the models from the front, back, top, bottom etc.
- **Set the position of objects** on the screen for analytical inspection of the models in relation to each other.
- **Set the visibility of objects** visualizing a part of the virtual cast, which allows for a more detailed inspection of particular objects on the virtual cast.
- **Set the objects transparency** for the current operation to see or hide their internal structure.
- **Switch to custom rotation and panning mode** enabling rotation and free movement of objects on the screen.

The buttons in the Visualization toolbar are presented in table below:

Item	Action
	View – The view buttons allow you to switch between a number of predefined viewpoints: • ***Front view*** • ***Rear view*** • ***Right side view*** • ***Left side view*** • ***Top view*** • ***Bottom view*** **Note**:The appearance of the View toolbar depends on whether the virtual cast is open (see the left images column) or closed (see the right images column).

	Zoom all – Sets the model to the default view, size and position on the screen leaving its current rotation angle intact.
	Real scale view – Displays the model on a screen in the real size. A special scale that appears on a screen helps to manually set the model in the real size by comparing an actual ruler with the scale on a screen.
	***Axis locked rotation –*** Locks the rotation to the ***x, y*** or ***z*** axes.
	Mouth view – allows you to switch between the two types of cast visualization: • ***Open mouth view*** – Enables detailed analysis of individual items on the virtual casts with minimal relation to each other. • ***Closed mouth view*** – Enables relational occlusion analysis for the maxillary and the mandibular arches.
	Show maxilla and ***Show mandible*** – Selects either the upper or the lower cast for visualization.
	Teeth segmentation mode – Displays the **Tooth panel** to view and manipulate the teeth and jaw as separate objects.
	Multi view – Displays five views of the same virtual cast in separate windows: Right side view, Front view, Left side view, Mandibular view and Maxillary view.
	Cross-section - Allows to create the 2D cross-section of the model at any stage of the workflow.
	Measurements and Custom Analysis – Allows perform 3D measurements on the model and make the custom analysis.
	Articulator - allows to imitate the movements of articulator with the designed model on the screen.
	Capture Screenshot - Allows you to capture screen shots with the single click and save them in the patient's model set.
	Show material and shadows – Marks the cast segments with the corresponding material colors and toggles on and off the function of shadow visualization.
	Show wireframe – Shows the triangulation of the virtual casts.
	Show as transparent – Changes the degree of transparency of the virtual casts.
	Show perspective – Transforms the model into a realistic 3D object, where the distant objects appear smaller than the closer ones.
	Rotate view – When selected, right-click and drag to rotate the view.
	Pan view – When selected, right-click and drag to pan the view.
	Zoom view – When selected, right-click and drag to zoom in and out.

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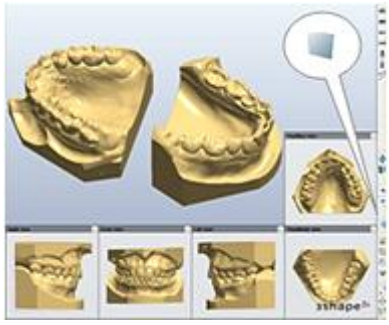
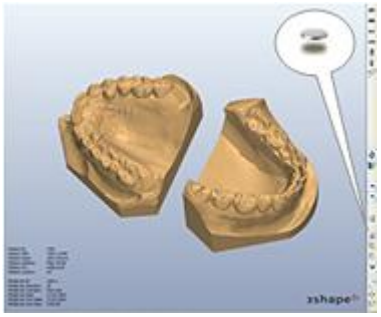
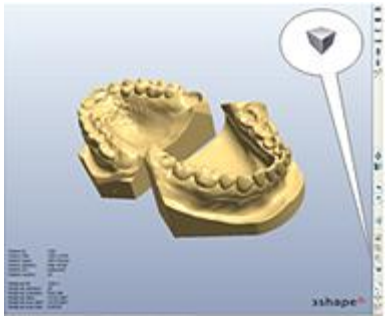
Applied views of some of the functions of the Visualization toolbar are shown on the image:



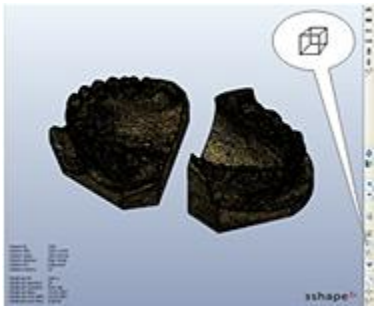
Multi view



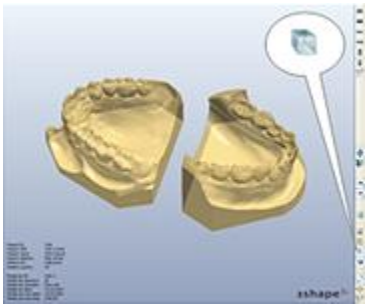
Show material and shadows



Show perspective

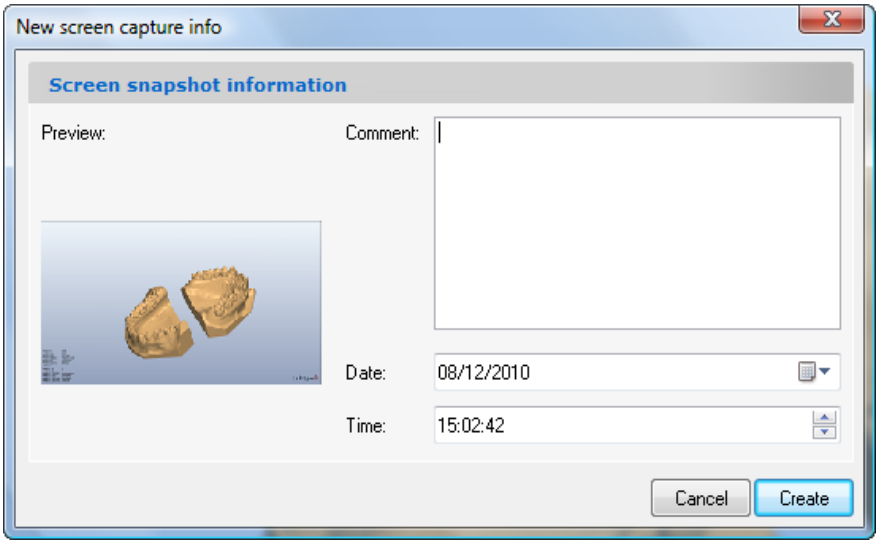


Show wireframe



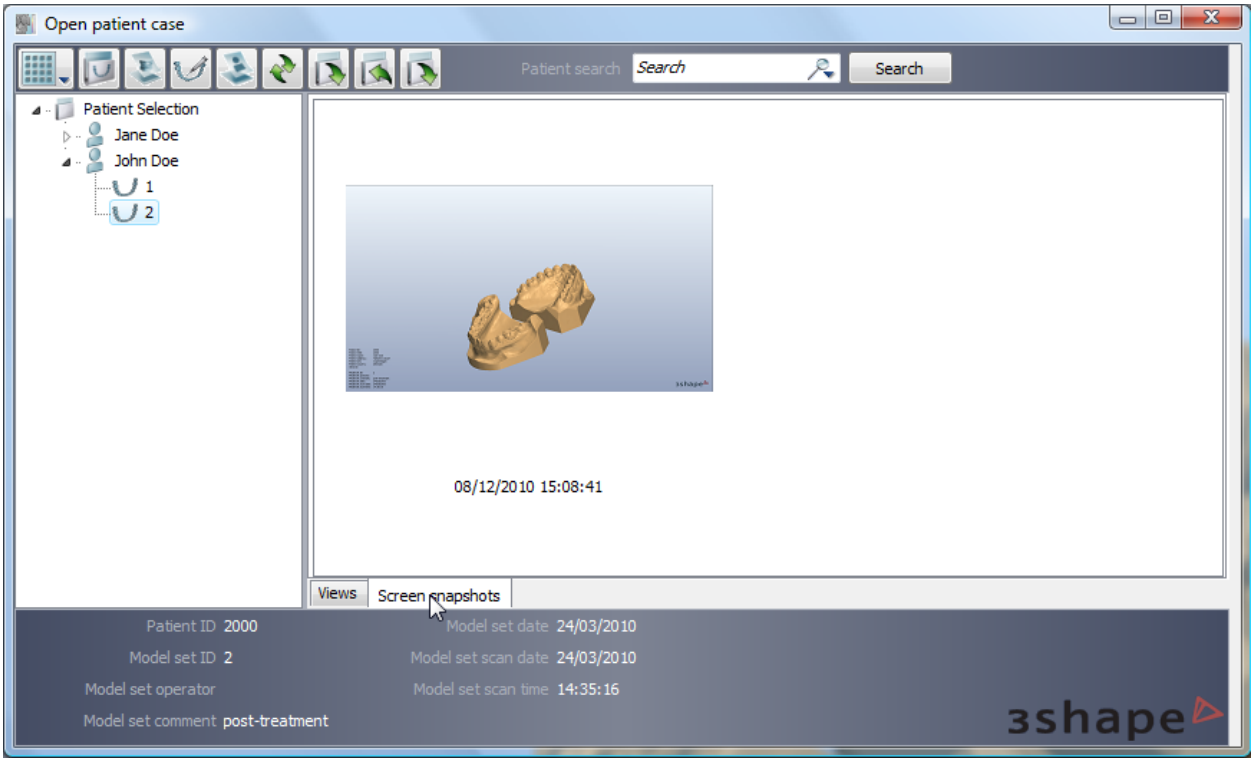
Show as transparent

You can capture a screenshot of the model's current view by clicking at the ***Screenshot*** button. This will open the *New Screen capture info* window:



- There is a preview window of a screenshot to the left.
- You can see the **Comment** field for your notes.
- The date and time of the snapshot can be set up in the corresponding fields.
- Click at the ***Create*** button to save the screenshot in the patient's folder.

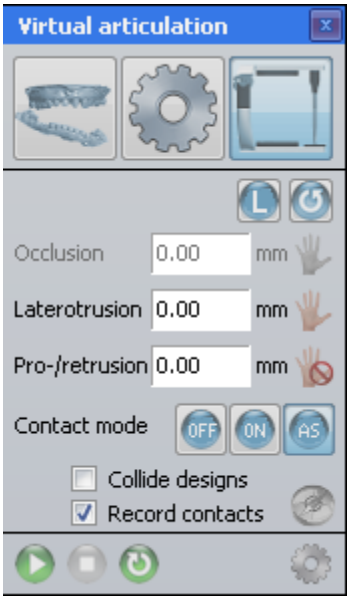
You can observe the screenshot in the Screen snapshots tab after selecting the patient and the appropriate patient's model:



The screenshot will be saved by default to
C:\ProgramData\3Shape\OrthoData\Patient's ID\Model set ID \Captures....

3 Interactive Tools

These tools positioned on the **Visualization** toolbar can be activated at any step of the analysis and planning process.
Activation: In order to avoid conflicts in user input between the open **Function** and the chosen tool (articulator, 3d measurements or 2D Cross section) and to be able to toggle between them, click on the tools' window to activate the given tool or on the function window. The active feature window is marked **blue** as illustrated.



Interactive tool: Virtual articulator active

3.1 Articulator

The **Virtual Articulator** feature can be activated with the ***Articulator*** button in the Visualization toolbar any time during the analysis or planning process.

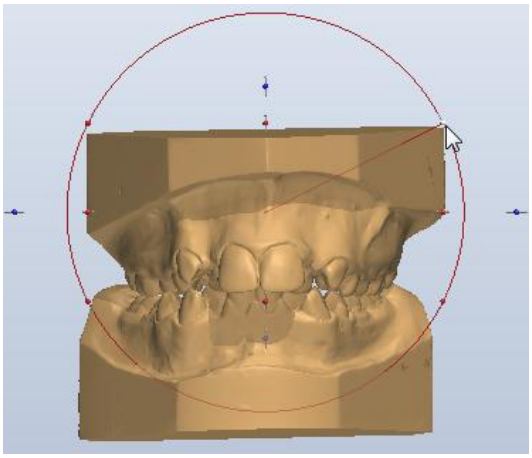
Step 1: Align the jaws position

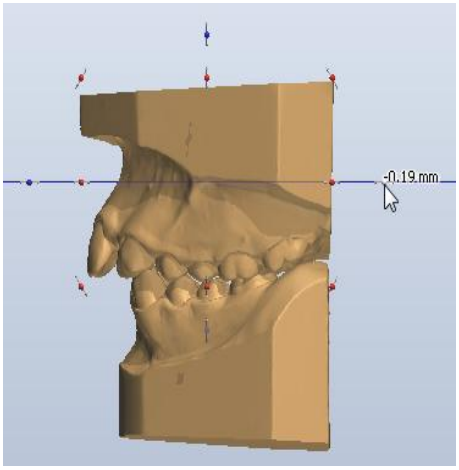
You can set the jaws in the desired positions by clicking the ***Modify*** button in the *Virtual Articulation* window and moving the control points with the cursor for a better fit (see the images below).

Occlusal change can be set directly by clicking the value and entering in the numbers directly or selecting it with the buttons next to the value.

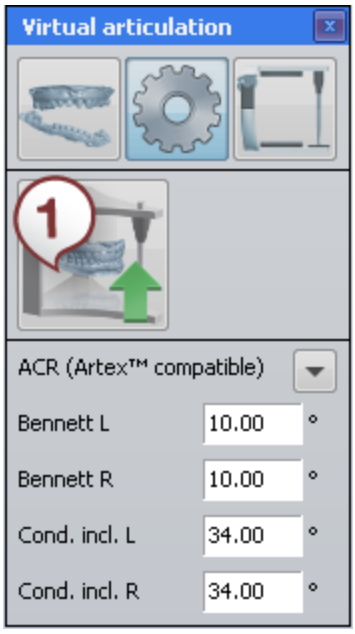
Use the buttons in the *Virtual articulation* window to undo your changes to the static occlusion **(1)** or update the static occlusion with the current alignment of the jaws, when you are satisfied with the results **(2)**.

Select ***Optimize occlusion*** to align the jaws automatically.





Step 2: Setup articulator model



Click the button on the **Virtual articulator** window to start the setup.
Select the type of the articulator from the drop-down menu after clicking the black arrow .

Bennett L, **Bennett R**, **Cond. incl. L**, C**ond. incl. R** are articulator model parameters, they can be set by clicking the appropriate editboxes and entering their parameters manually or selecting them with the buttons next to the values.

The ***Auto placement*** **(1)** button allows you to customize the default placement method and perform auto placement of the model. Click it to open the *Auto placement options window:*

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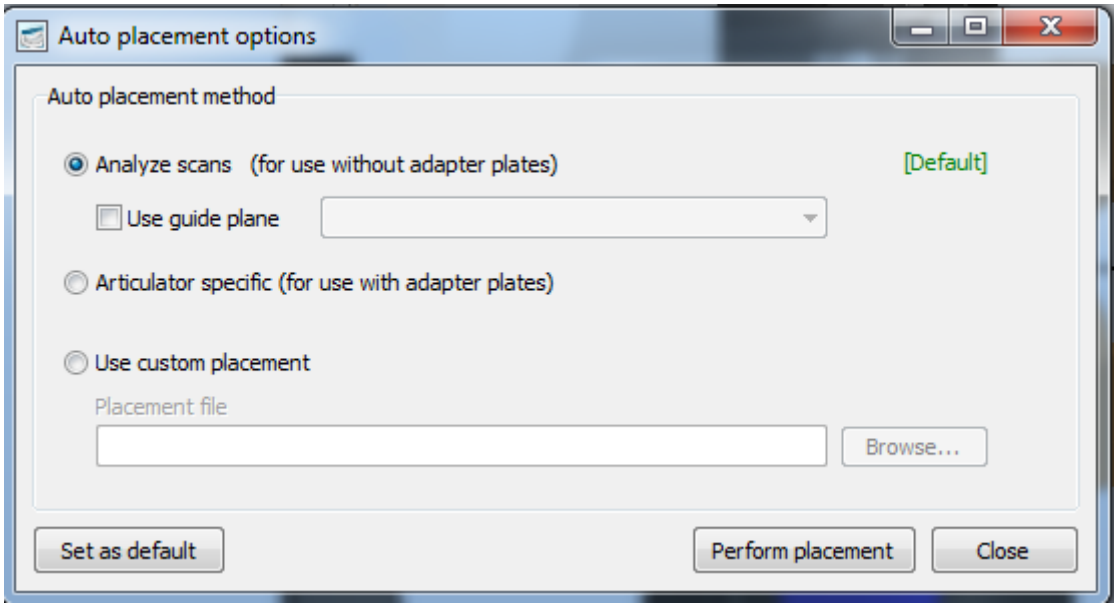
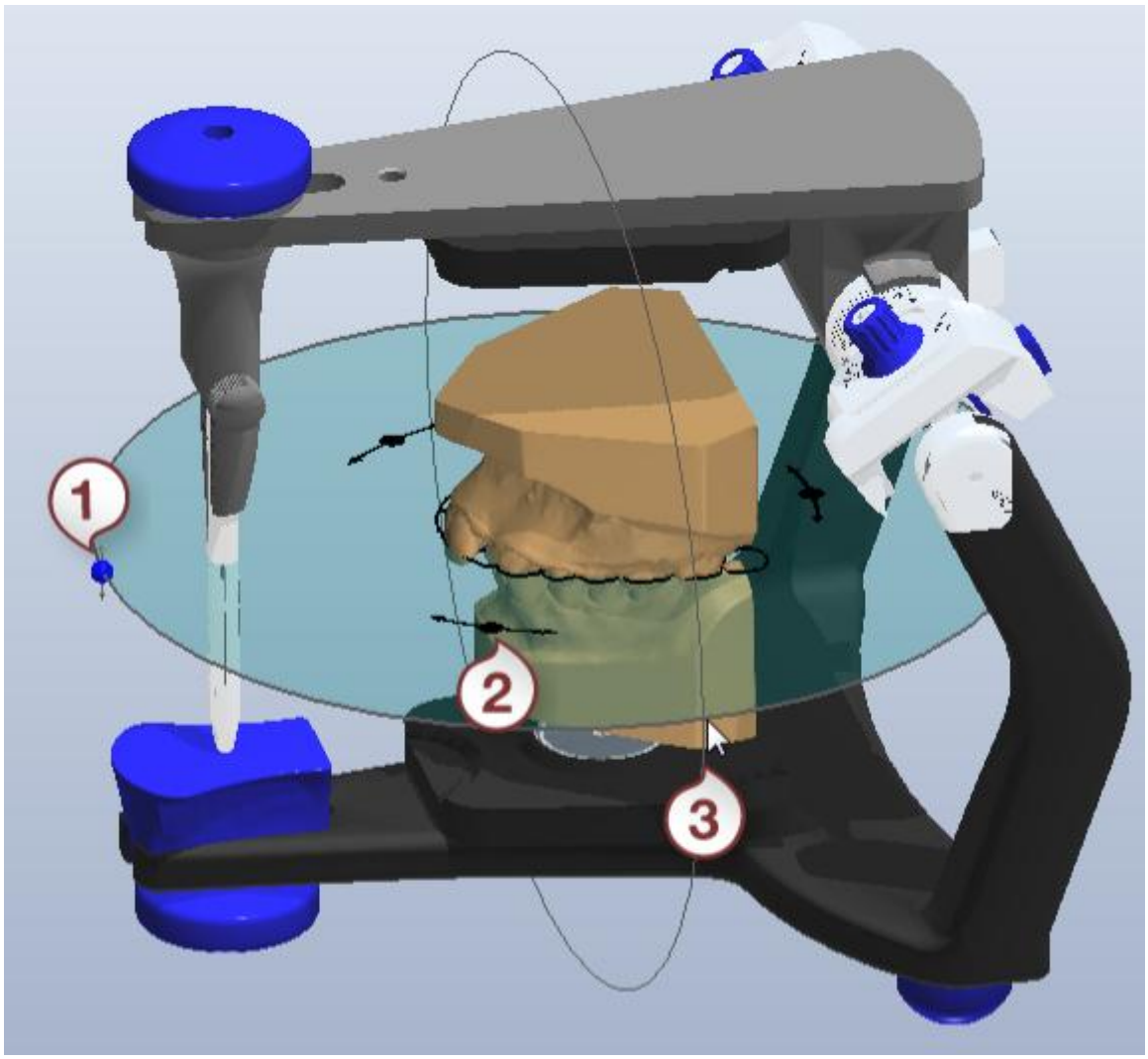


You will need to click the Browse button and select your placement file to use.
The Set as default button saves you current auto placement method to use as the default one for future orders.

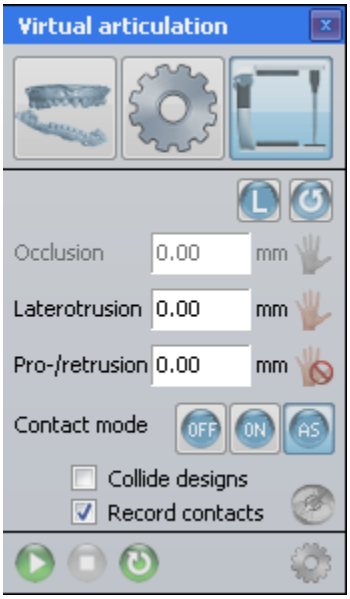
The Perform placement button initiates the auto placements process with the chosen options.
Analyze scans is selected for the models without adaptor plates.
You can load predefined planes created in OrthoAnalyzer, such as the occlusion plane as default position in the articulator by checking the **User Guide plane** box and selecting the plane from the drop-down list.
Mark the **Use guide plane** to activate the drop-down menu of the planes, used for the placement.
Articulator specific option is used when the adaptor plates are included.
Use custom placement allows you set the path of the placement.

Click the ***Browse*** button to set the **Placement file** path.



1. *Moves the articulator up and down*
2. *Rotates the articulator*
3. *Change the angle of the articulator position*

Step 3: Setup articulator

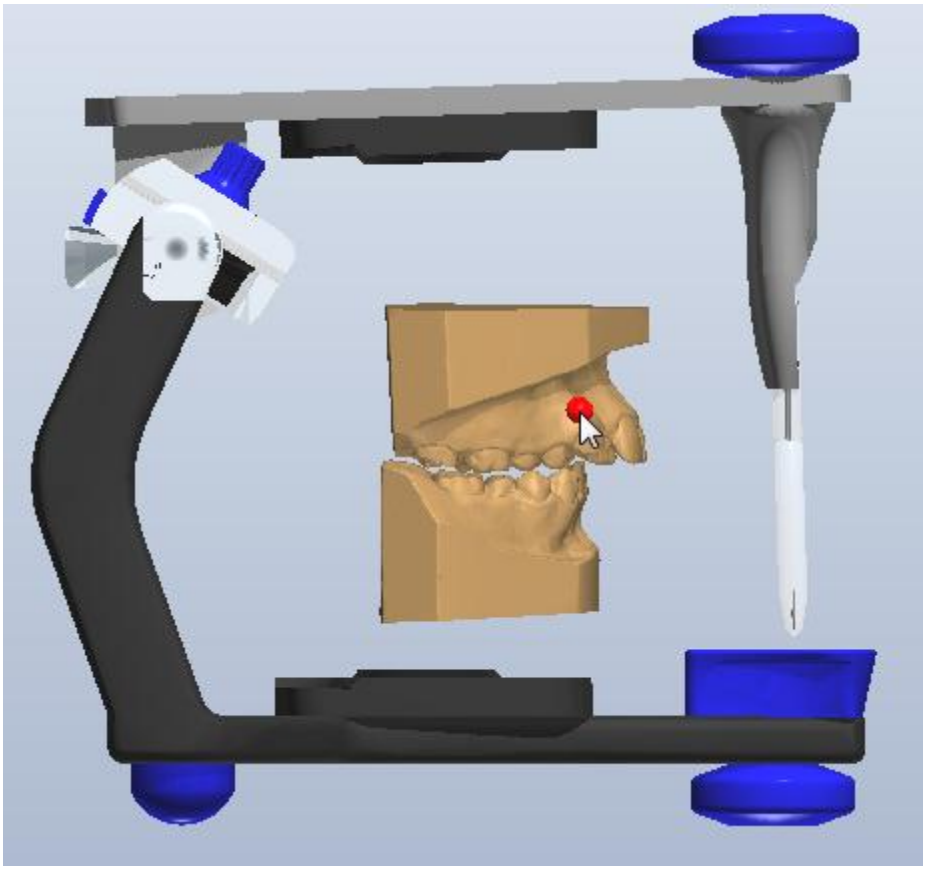


Click the on the *Virtual articulator* window to open the settings tab.

To set **Occlusion**, **Laterotrusion** and **Pro-/retrusion** you can:

- Edit the parameters in the appropriate edit boxes in the *Virtual articulation* window.
- Move the jaws by holding the left button on the mouse (the **red** control point appears and the parameters are updated automatically).

Click the ***locked*** button to change it to the ***unlocked*** to free the movement of the required plane. Place the cursor over the articulator/model and drag it while keeping the mouse button pressed:



With the Upper / Lower jaw button you can select the jaw you want to move with when resetting the articulator to the static occlusion.

Click to lock the modelling position of the articulator. To set the articulator in modelling position click .

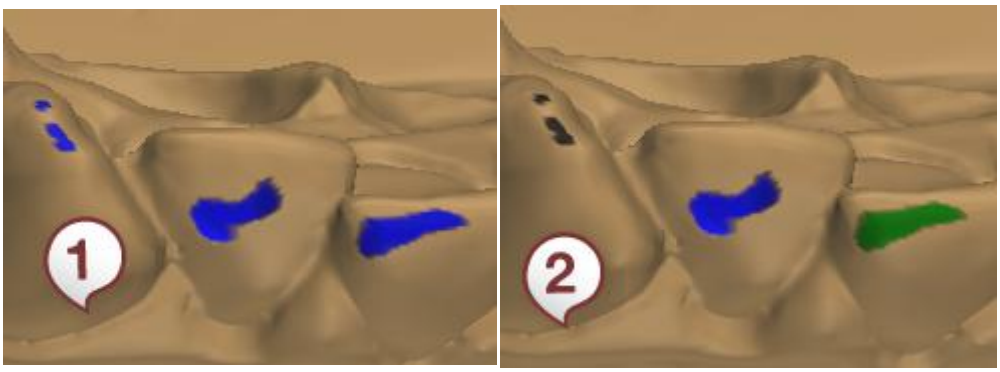
There are three options in the Articulate function:

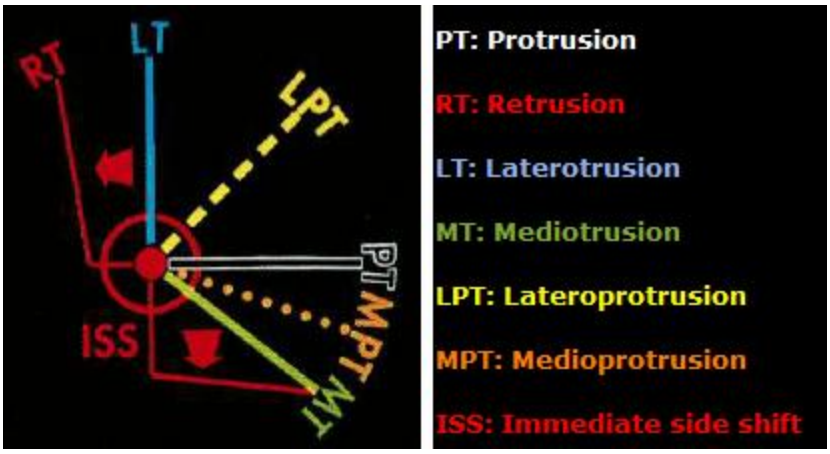
Contact mode:

- ***on -*** contacts are recorded but the articulator can be manipulated freely like a physical articulator
- ***off*** - no contact is recorded
- ***auto shut (AS)*** - will always maintain a contact between the two jaws; so in effect the articulator cannot be opened completely.

Collide designs - indicates in color the collisions of the jaws.

The ***Occlusal compass*** button allows to color the areas of collision according to the specific articulator movement using the legend below **(2)**. When the occlusal compass is disabled, contact colors areas are shown in blue **(1)**:





The legend of the compass

Record contacts - if checked, enables the **Adapt design** section. Indicate the Min distance and **Adaption radius** by setting the parameters in the appropriate edit boxes.

Step 4: Simulate articulation

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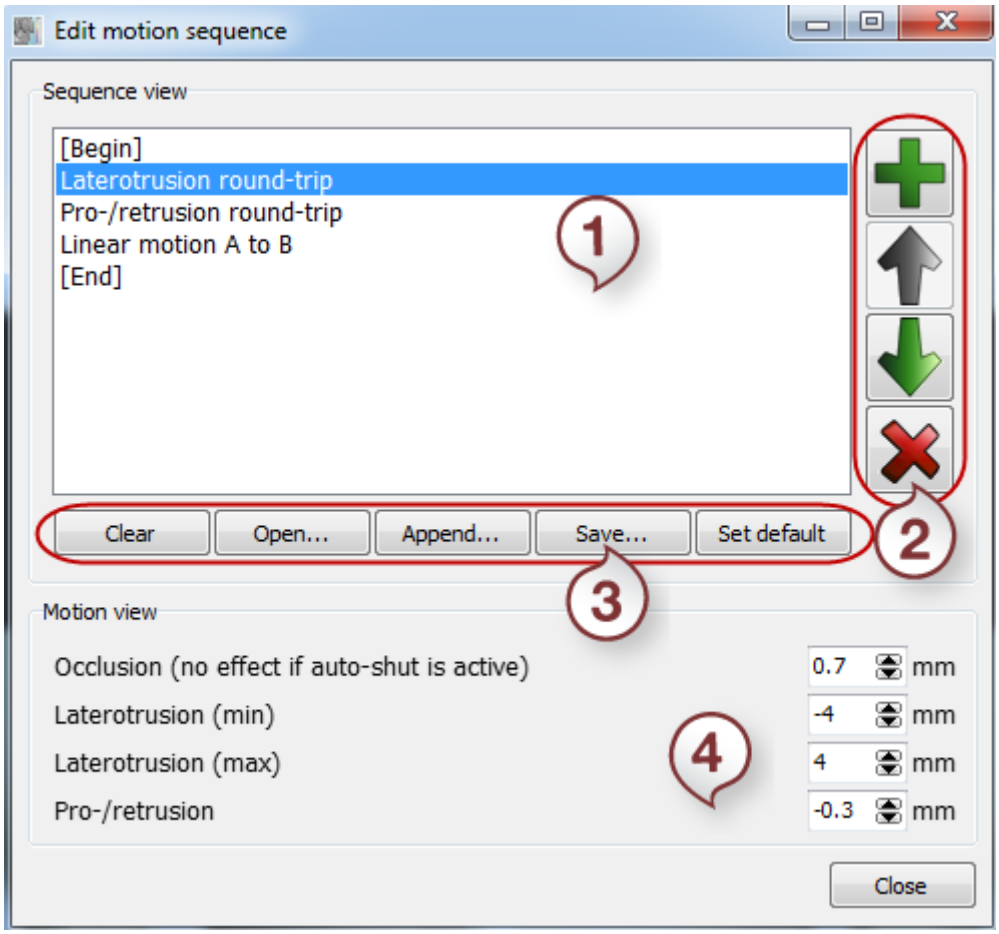
It is possible to imitate the articulation motions by clicking the button to start the articulation. Click to pause the process or to stop it. To repeat the process click . Click the button to customize the motion sequence:



1. *List of sequences*
2. *Edit buttons*
3. *Operation buttons*
4. *Motion view section*

The List of sequences can be customized with the **Operation buttons**. Add **new sequence**, **Move up/down** the list or **Delete** from the list.

3.2 3D Measurements and Custom Analysis

The ***Measurements and Custom Analysis*** option allows you to perform and edit the desired 3D measurements on the model.

Landmarks

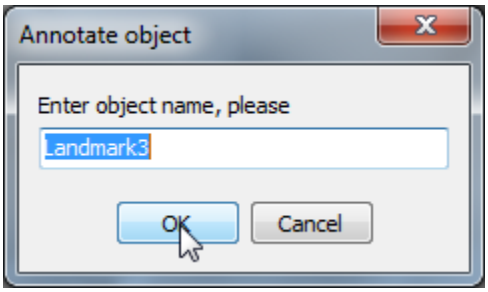
Landmarks represent simple (**red**) points that define angles, occlusion planes, cross-sections, sections for measurements etc., thus, making up to all the analysis objects enabled by the system.

The arrow-like surface markers help you navigate around the landmarks:

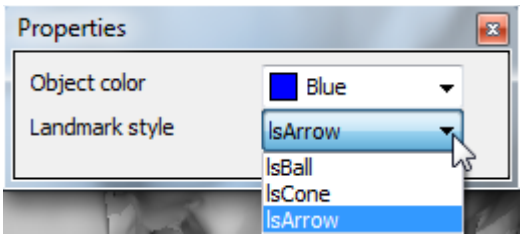
Blue arrows define a passive selection.

Yellow arrows indicate the selected objects. Their positions can be changed by dragging the corresponding marker.

The arrow turns white when you place the cursor on it.

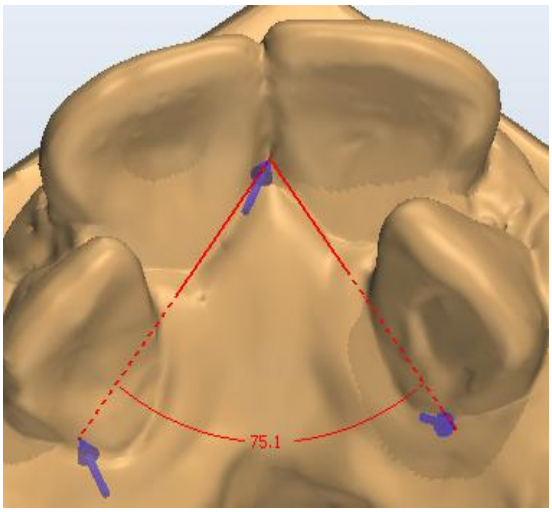


Annotate the landmark by right-clicking it and selection the appropriate option from the popup menu. Enter the name of the annotation and click ***OK.***

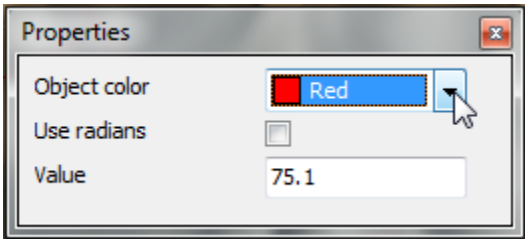


Customize the view of the landmarks by right-clicking a landmark and selecting the color and form of the landmark from the drop-down menu.

- ***Angles***



Angles are defined by three landmarks and the measurements which are immediately displayed. It is possible to customize the view of the measurement by right-clicking it and selecting **Properties** from the pop-up menu:



You can open this pop-up menu by right-clicking the appropriate measurement in the *Custom objects* window.

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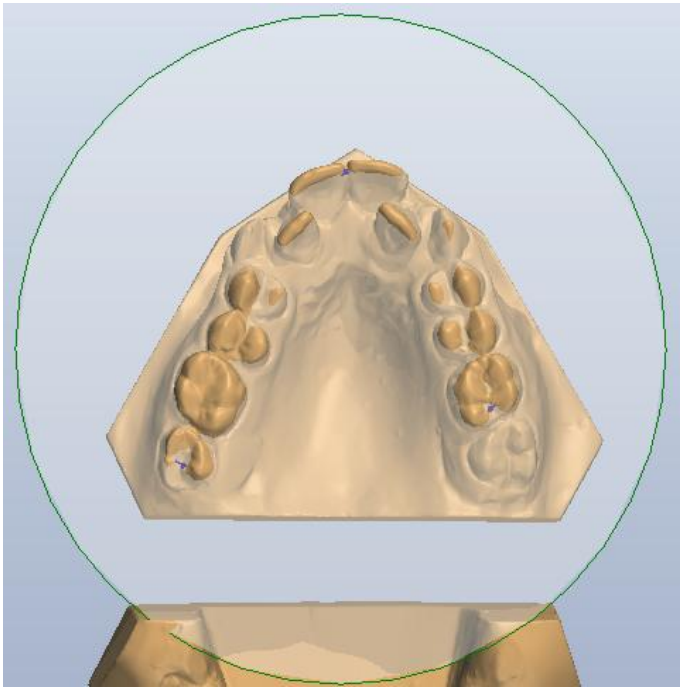
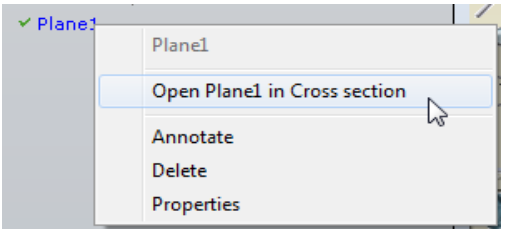
- ***Planes***



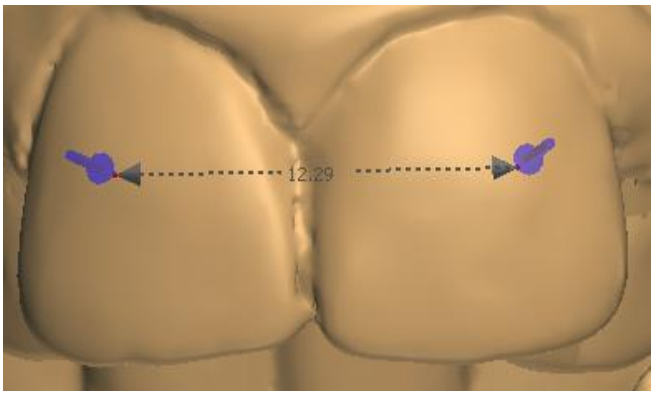
Set a plane by positioning three landmarks on the model.
It is possible to customize the plane by right-clicking its name in the *Custom objects* window:



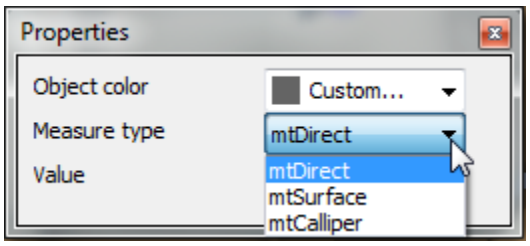
Measures

- ***- direct***

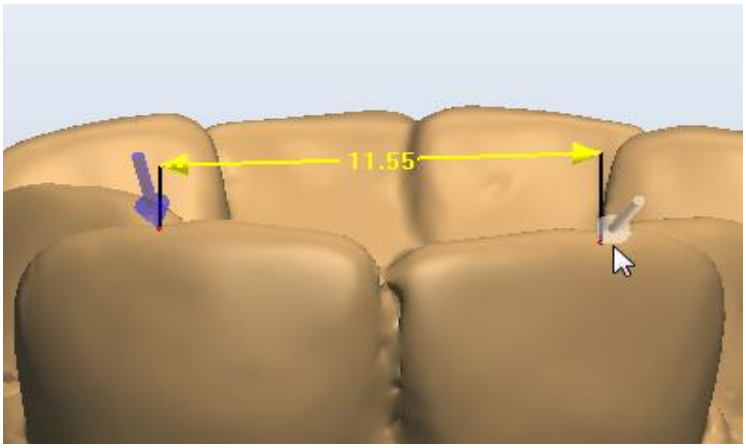
Place two landmarks on the surface of the model to make the measurement. It is possible to edit it by right-clicking the measurement line (if place a cursor on it turns white, if selected turns yellow).



Place two landmarks on the surface of the model to make the measurement. It is possible to edit it by right-clicking the measurement line (if place a cursor on it turns white, if selected turns yellow).
You can select the **Measure type** from the drop-down menu after right-clicking the measurement and select **Properties**:

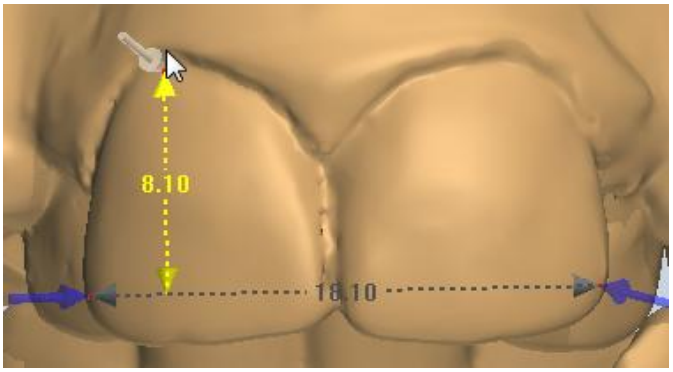


- - ***calliper***



Indicate the measurement by two landmarks replicating a physical calliper. Customize the measurement by right-clicking the landmark and opening the popup menu.

- ***Distance to line***



To make this measurement: create the line->place the landmark at the area you want to make the measurement from->click at the selected line

- ***Distance to plane***

To measure the distance to plane create a plane->place a landmark on the area you want to measure the distance from->click the **green** border of the plane or the annotation (if there is):

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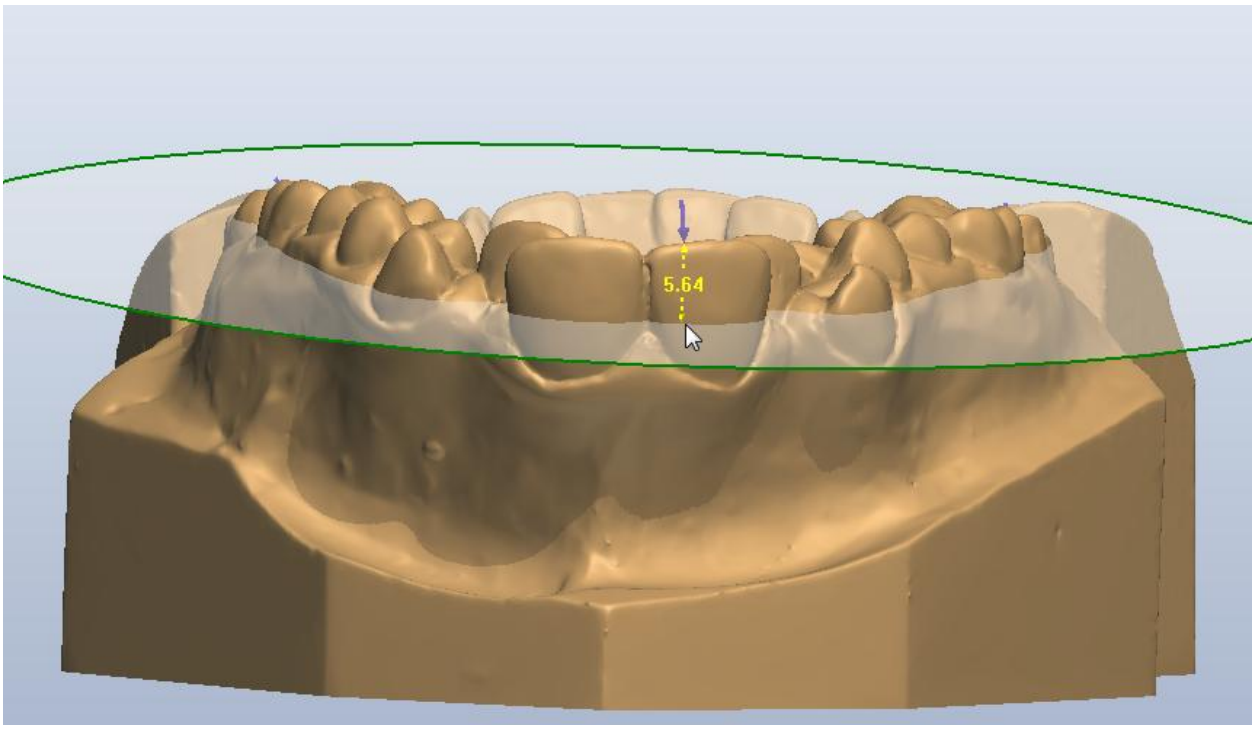
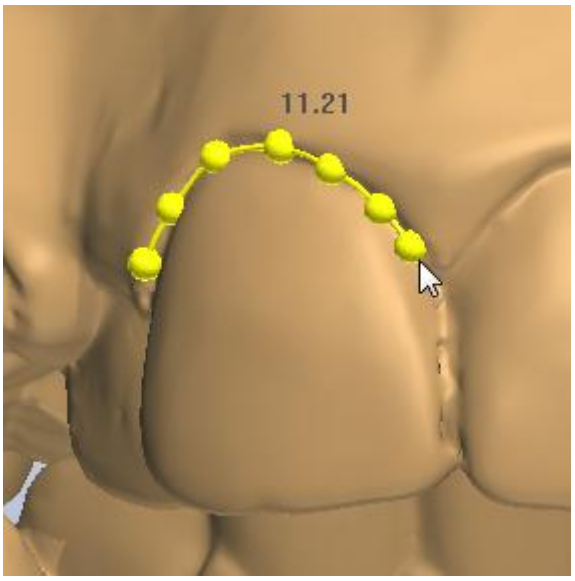
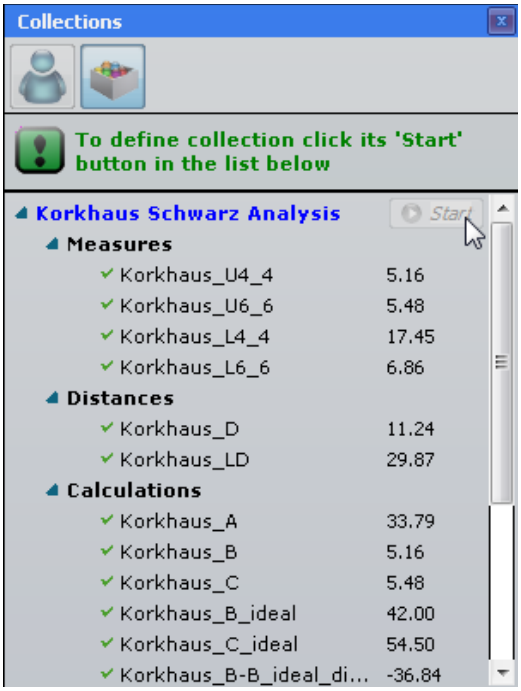


- ***Custom spline***



To make this measurement place a few control points that define the spline. Double-click the last control point to close the spline.

To hide the measurement, click the **green** tick in front of the measurement/plane.
The selected object is highlighted **blue**.
To fold/unfold the groups click the ◢ arrow in front of its name.



Click the ***Collections*** icon to open the appropriate tab.
Follow the instructions displayed at the top of the window.
Click the ***Start*** button to begin the process.
The results of the measurements performed on the model will be displayed in the table.

3.3 2D Cross Section

You can open the **Cross section** function from the **Visualization toolbar** to access all 2D-based planes, measurement and symmetry tools.

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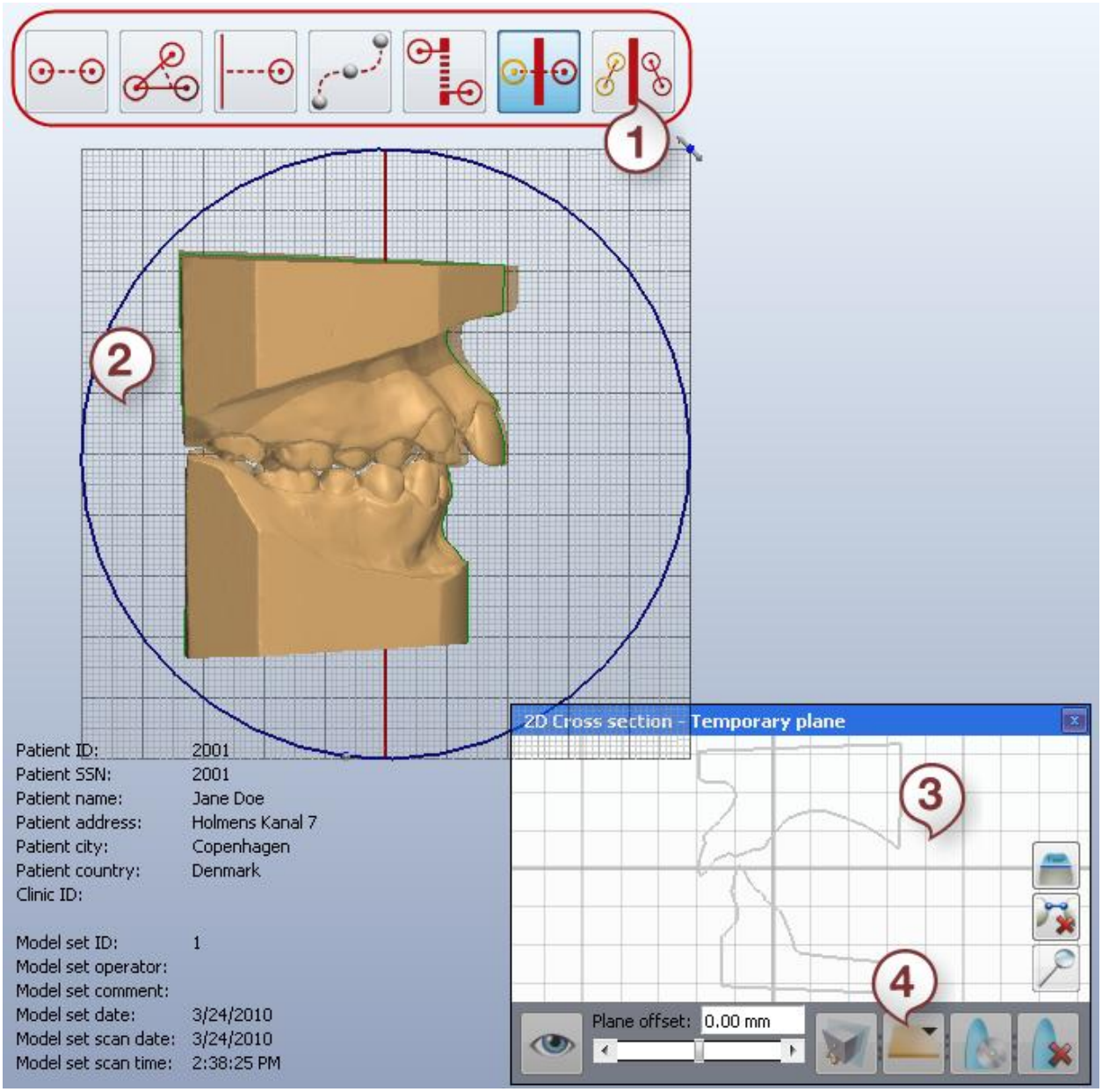
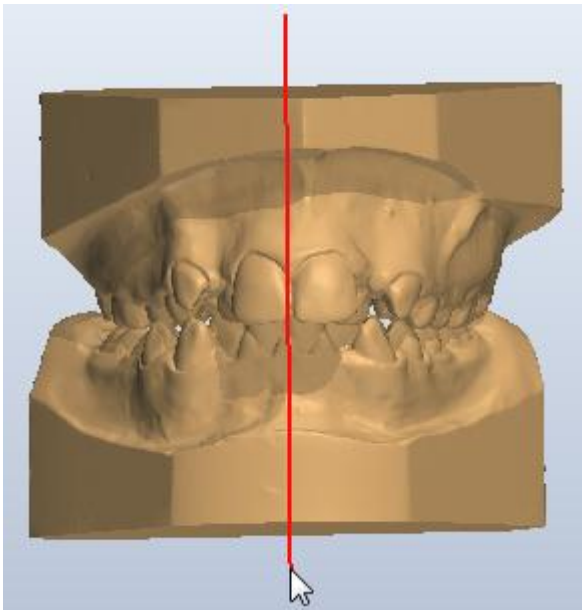
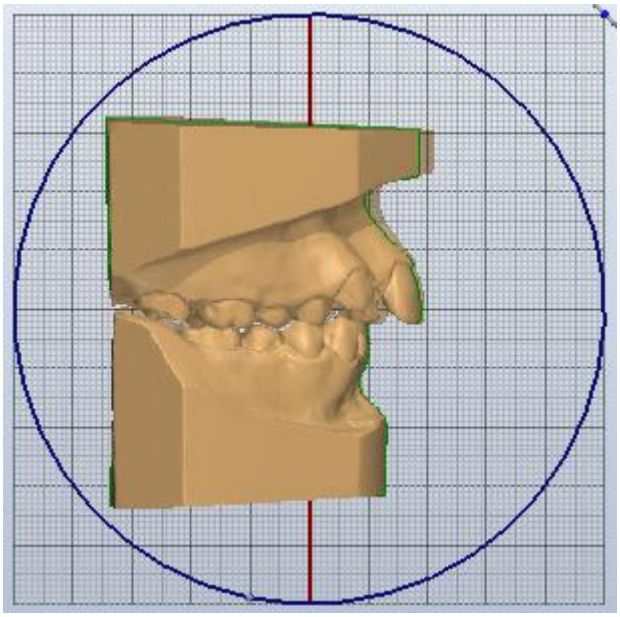


1. *Measuring buttons*
2. *Cross-section plane*
3. *2D Cross-section preview*
4. *Manipulation buttons*





Step 1: Draw the Cross-section plane

Draw the red line, where the cross-section will be by holding the left key of the mouse.
Single click at the line creates the cross-section.
It is possible to set the cross-section by placing three points.

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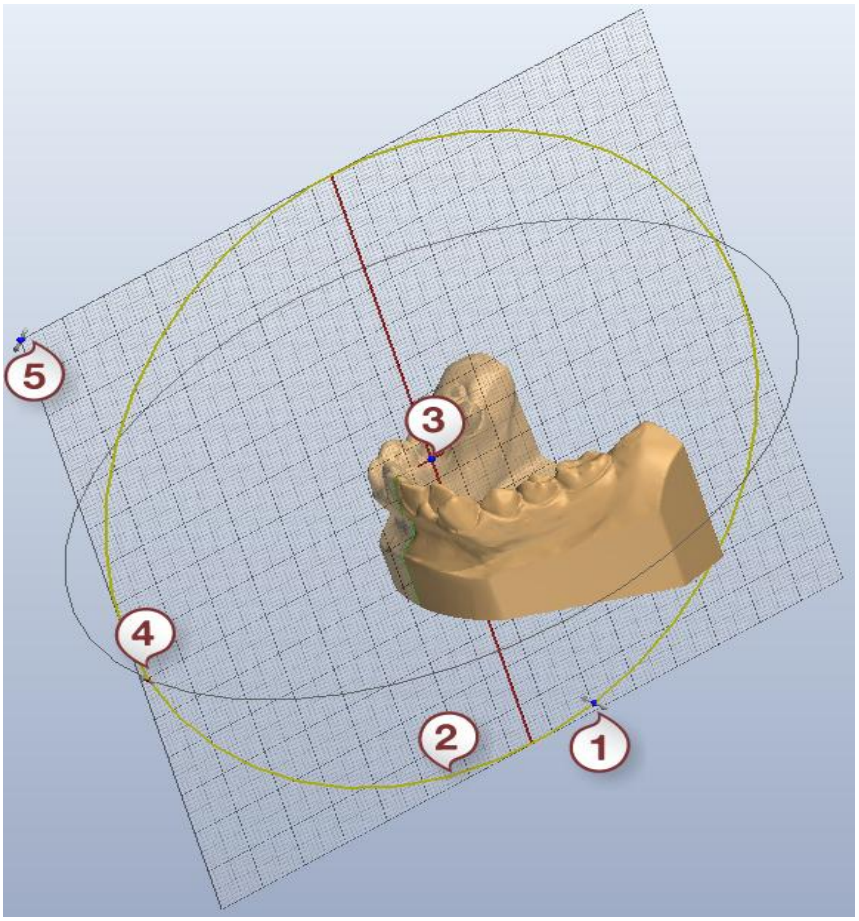


Step 2: Move the cross-section plane with several elements:

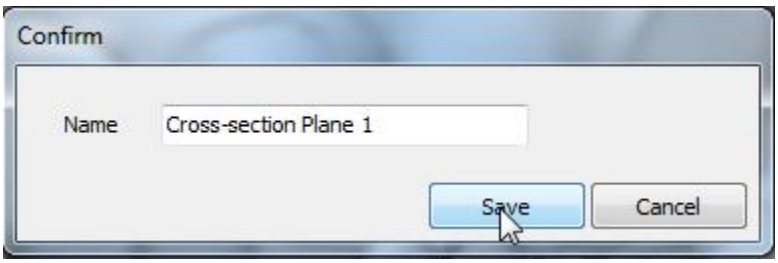
1 - The control point located on the blue circle defining the plane moves the plane back and forward without changing its slope.
2,4 - Change the slope of the plane along the cross-section plane which is perpendicular to it. To visualize this additional plane, activate the blue circle by clicking on it to make it turn beige. As long as the beige circle is kept pressed, the system displays the grey circle with its own brown control point. While pressing the mouse button, drag the control point to change the slope of the cross-section plane.
3-The central point moves the plane around the model leaving the slope of the plane unchanged.
5- The control point located on the plane corner rotates the plane clockwise and anti-clockwise without moving it or changing its slope. Thereby, you can select the most appropriate position of the plane for making on-grid measurements.

Use the manipulation buttons to operate with the cross-section:

	View options - includes the buttons that set the viewing parameters:
•	***Clipping plane - Left*** - Hides the right side of the model in relation to the cross-section plane.
•	***Clipping plane - Right*** - Hides the left side of the model in relation to the cross-section plane.
•	***Fixed camera*** - Locks the plane in one position and moves the model instead.
•	***Grid*** - Turns on/off the grid on the plane.

	Along Dental Arc - Allows you to position the cross-section along the dental arc with the spline (shown in green) going through its center.
	Standard planes - Allows you to select the plane from the list of the planes you create.
	Save plane - Allows you to save the created plane.*
	Clear View - Removes cross-section.
	Measure area - Allows you to measure distance on the model in the 2D Cross-section window.
	Clear measure - Deletes the measures.
	Zoom all - Allows you to zoom the model.

* OrthoAnalyzer lets you save as many 2D planes as you require. Click the ***Save plane*** button to open the **Confirm** popup window. Select ***Save as new plane*** to proceed. Give the Name to the new plane and click ***Save.*** The new plane will be displayed in the drop down menu in the ***Standard planes*** option:



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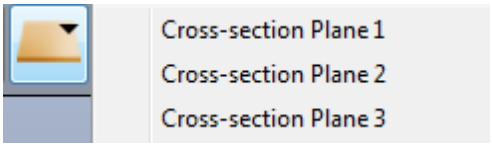
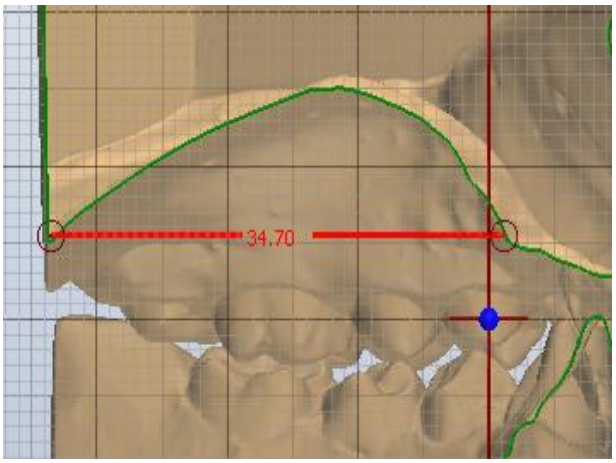


After you have saved the planes, you can select them from the drop-down menu in the ***Standard planes*** option or for default positioning in the virtual articulator (see the Articulator section).

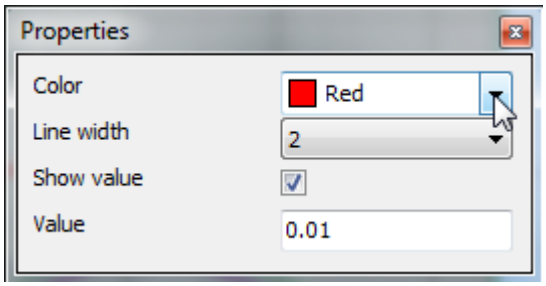
Step 3: Make the 2D measurements

Use the buttons at the top of the screen to apply different 2D measurement on the cross-section:

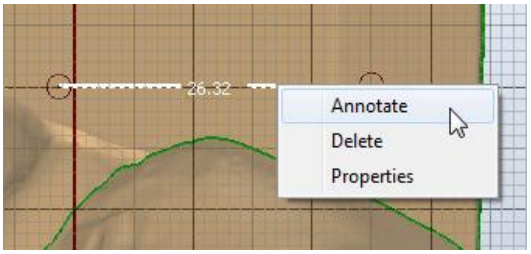
Length measurement requires two points. Measures length from point to point.



It is possible to customize the settings of the measurement. Right-click it to open the popup menu and select **Properties**:

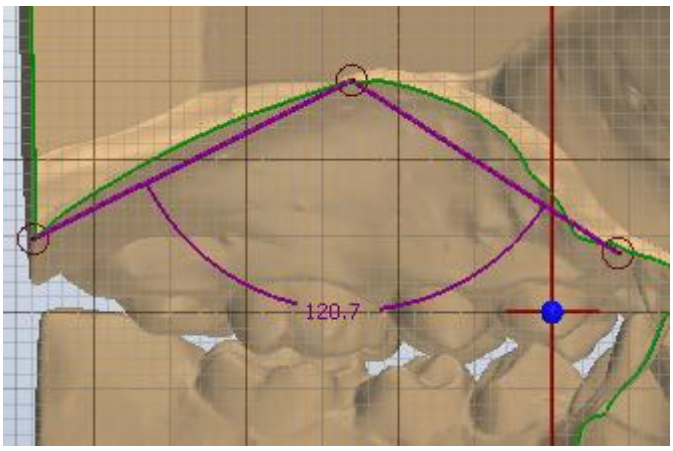


Select the color of the measurement from the drop-down menu. You can adjust the Line Width in the drop-down menu and the Value by indicating the parameters in the appropriate editbox.



To move the control point, select the point (turns white) and drag it to its new position.
It is possible to annotate the selected measurement (turns white) or **Delete** it.

Angle measurement requires three points. With angle measurement, the second point becomes a vertex of the angle.



It is possible to select the **Revert angle** or edit the angle parameters manually.

Distance measurement allows to measure a distance to an existing line.

Spline measurement requires several control points on the curved area.

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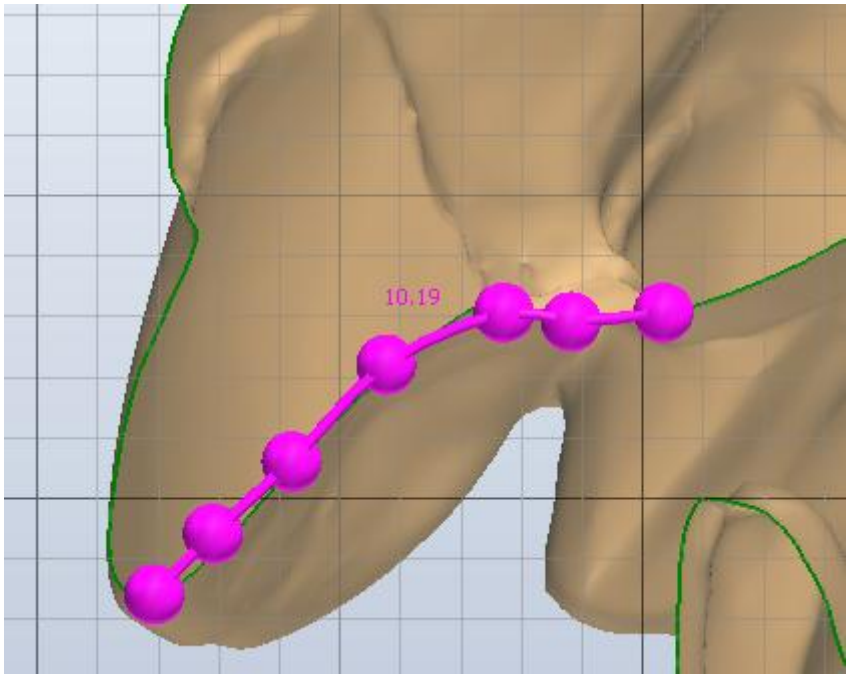
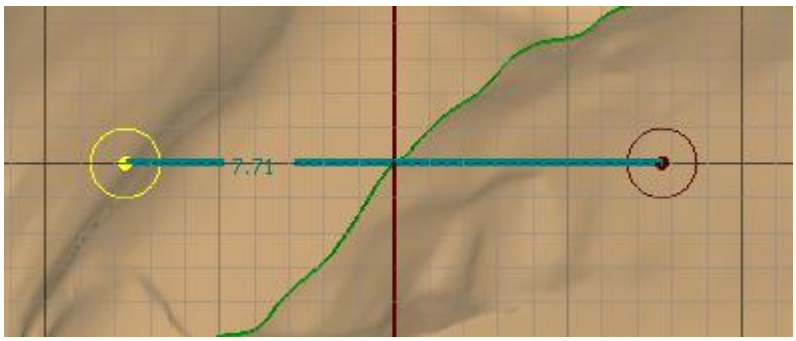
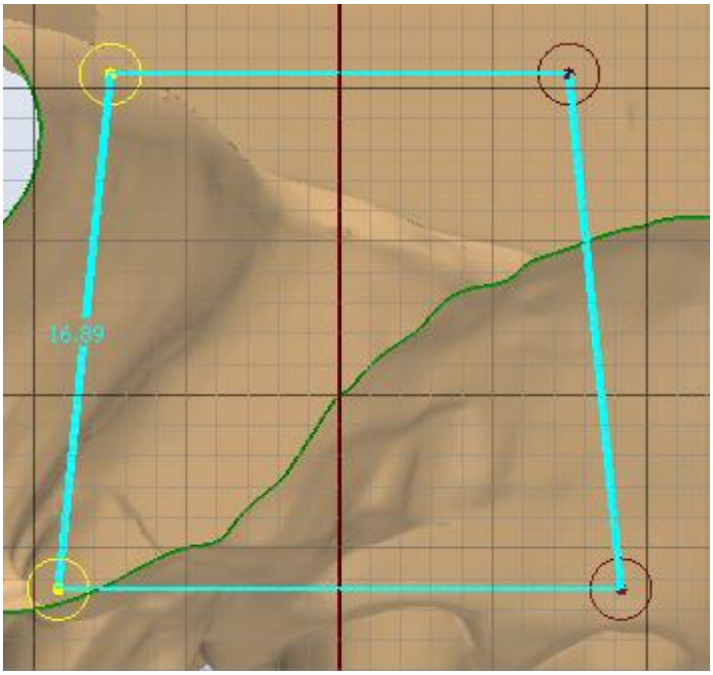


Distance along centre line requires two points. Measures the distance in relation to the centre line.

Symmetry points require one point. Automatically places the second point symmetrically to the selected one.



Symmetry guide requires three points.



For the ***Symmetry guide*** option it is possible to **Show additional line** and display **Distance to the center line**.

The **Plane offset** slide bar

allows you to move the cross-section plane back and forward from the initial position, with the actual distance values being indicated.

The measurements placed on the model in the 2D cross section window are automatically mirrored on the model in 3D.

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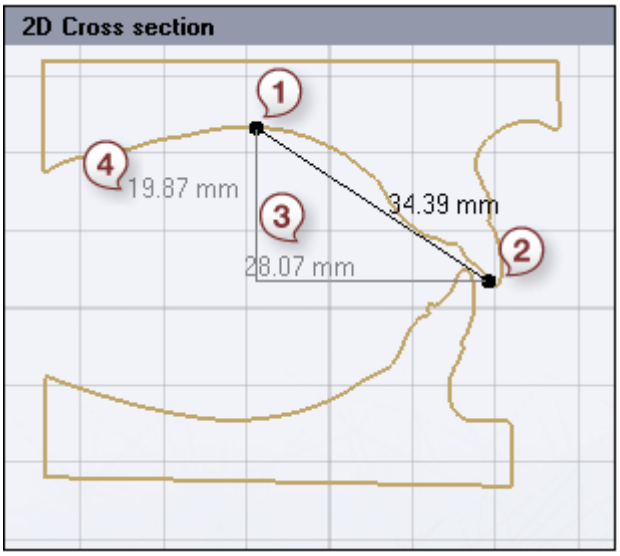
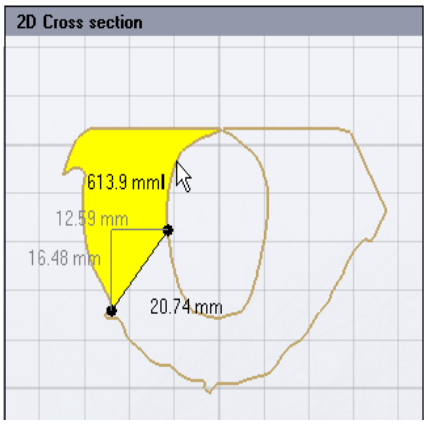


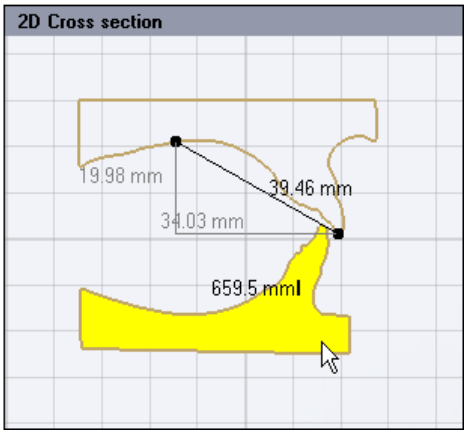
1, 2 – The points placed on the cross-section are automatically attached to the beige contour of the cross-section.
3 – The system automatically builds the right-angled triangle using the selected measurement line as its lateral face.
4 – The measurements of the other faces of this triangle are also displayed on the cross section.

To clear the measurements made, click the button.

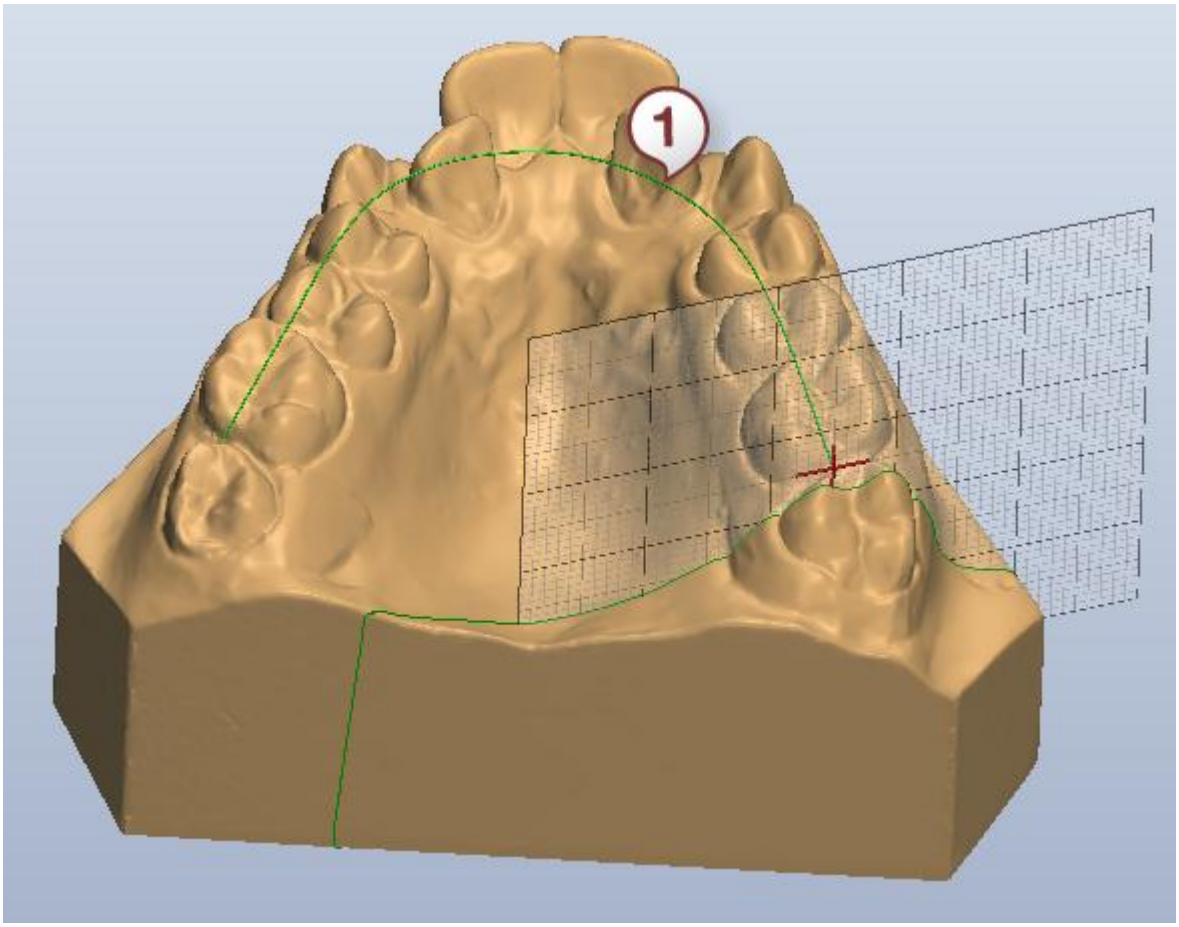


The **2D Cross section** window enables area measurements on both sides of the measurement line.

Click the ***Measure Area*** button and place the cursor over the area you want to measure. The area becomes colored yellow and its value is calculated automatically.



	Along Dental Arc allows to create the cross-section along the dental arc with the spline **(1)** (shown in green) going through its center. The centre of the cross-section plane is marked with a red cross as shown on the image:
•	***Lower jaw*** - turns on the cross-section for the lower jaw.
•	***Upper jaw*** - turns on the cross-section for the upper jaw.



Move the plane along the jaw by pulling the slider of the **Plane offset** slide bar.
It is possible to open this function on any stage of your modelling process.

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4 Function Panel

Each stage in the analysis and planning process is represented by a tab in the Function panel.

As different jobs require different functions, the Function panel changes its look depending on a job. You are free to choose the first step in the Function panel to complete. Therefore, there is typically no a predetermined workflow of tasks however, the tasks can be organized in predefined workflows by using the workflow wizard (see section Customized Workflow Wizard). An example of a workflow is the **Analysis** tab which deduces the analytical meaning out of the measurements set up in the **Configuration** section.

A brief overview of functions available in the Function panel is presented in the table below.

Hint: Please refer to the chapter 4 for more information about each of the tools included in the Function panel.

Item	Action
	The first part of the toolbar is the **Manipulation** tab. It includes the following steps:
Occlusion	Helps realign the upper and lower virtual casts.
Alignment for open model set	Helps align the upper and lower virtual casts for the open model to make the visualization and manipulation of the model more convenient.
Virtual Setup	Treatment simulation via virtual setups.
	The second **Configuration** tab assists with indicating landmarks on the virtual model set and contains the following steps:
Setup maxillary model local origo	Specifies the point on the model which will subsequently serve as local orientation point from where the coordinate system axes originate.
Setup occlusion plane	Sets up the occlusion plane for the model set.
Preparation for maxillary model	Definition and segmentation of individual teeth for the maxillary side.
Preparation for mandibular model	Definition and segmentation of individual teeth for the mandibular side.

	The functions in the **Analysis** tab are assorted according to the operations executed in the previous steps, they typically rely on the selections and definitions made in the preceding sections. The tab contains the following steps:
Dental arc analysis	Provides calculations for arch lengths based on the selections made in the **Configuration** section of the Function panel and enables the creation of an ideal arc shape to be used for the treatment.
Analysis reports	Provides detailed analyses of the various orthodontic data for both maxillary and mandibular casts comparing them with the standardized values tables pre-set in Ortho Control Panel. This involves inspecting the tooth widths, space, the anterior and Bolton ratios.
Overbite/Overjet	Provides the overbite/overjet measurements for easy diagnostic.
Questionnaire	Allows to present customized analysis.
Generate report	Creates an analysis report based on the analysis data ready to print.
Occlusion map	Visualizes the occlusal distances in the model set according to the color scale applied to the virtual casts.
	The final functional tab **Model Set Compare** assists in effective comparison of two model sets attached to one patient. The tab contains the following steps:
Compare model sets	Enables immediate comparison of model sets visualizing the two simultaneously.
Maxillary model registration	Aligns upper models belonging to different model sets of the same patient for comparison.
Mandibular model registration	Aligns lower models belonging to different model sets of the same patient for comparison.
Difference map for two model sets	Compares shape differences between the reference and the compared model sets with the help of a detailed color scale.

4.1 Manipulation

The aim of this step is to set the occlusion for the casts and create the virtual model setups.

The **Manipulation** tab contains three steps: **Occlusion, Alignment for open model set** and **Virtual Setup**. These

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steps are described in details below.

4.1.1 Occlusion

The **Occlusion** step helps to align the upper and the lower virtual casts.

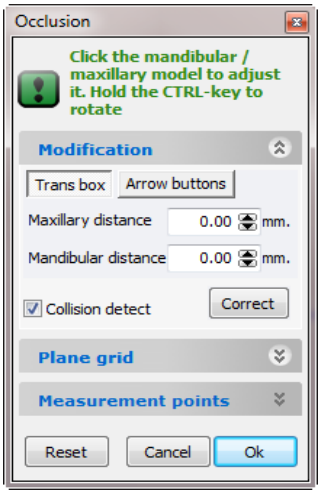
Step 1: **Open the Occlusion option**

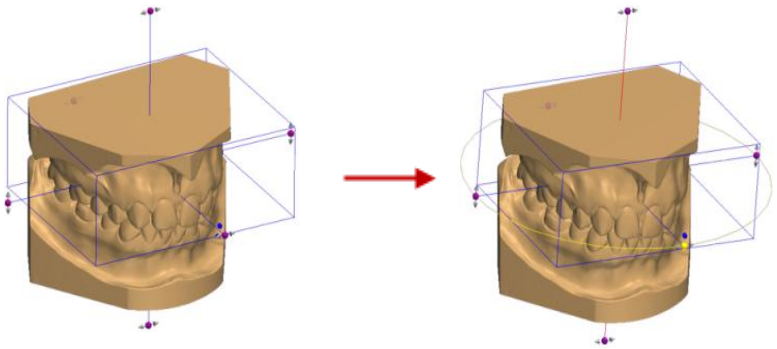
Click the ***Occlusion*** button on the **Manipulation** tab. Follow the hints provided in the dialog box below.

Step 2: **Edit positions of the virtual casts in relation to each other using the following options:**

- **Trans box**:

1) Click on either the upper or lower casts to visualize the corresponding bounding box.
2) Drag the purple control points on the ends of the axis arrows (turn yellow) to set up the ultimate position of the cast.

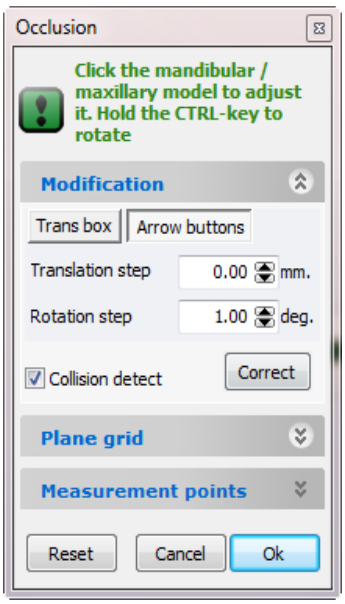


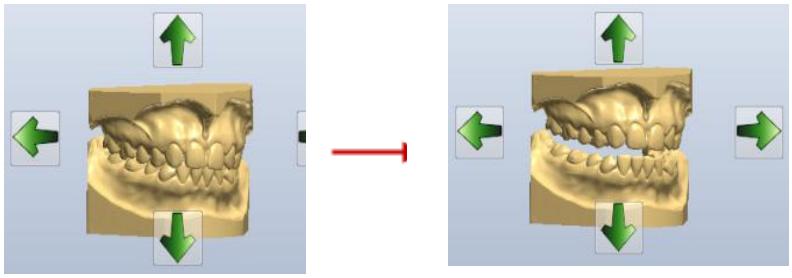


Enter the necessary values for the **Maxillary distance** and **Mandibular distance** to move the upper and the lower casts up and down.

- **Arrow buttons**:

1) Click on either the upper or lower casts to visualize the green arrows.
2) Click on one of the four arrows to set up the ultimate position of the cast. Hold the CTRL key to rotate.

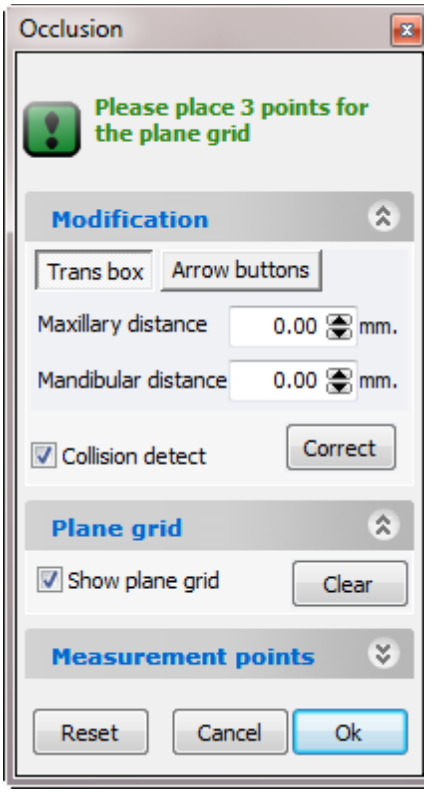




Transition step – sets up the distance for which the cast moves up or down at one click on the arrow.

Rotation step – sets up the degree of rotation of the model.

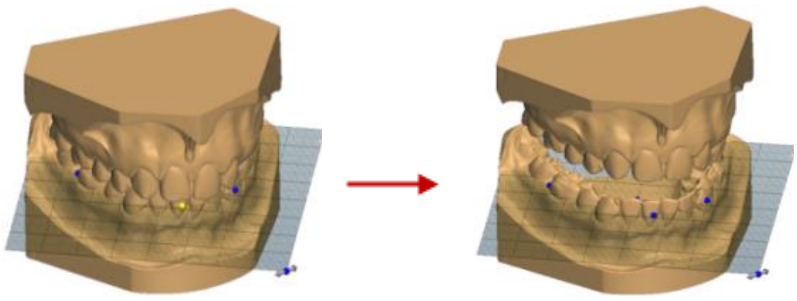
- **Orientation plane**:



1) Customize the orientation plane with the help of the three control points – check the **Show plane grid** checkbox, and select three points on the models defining the plane.

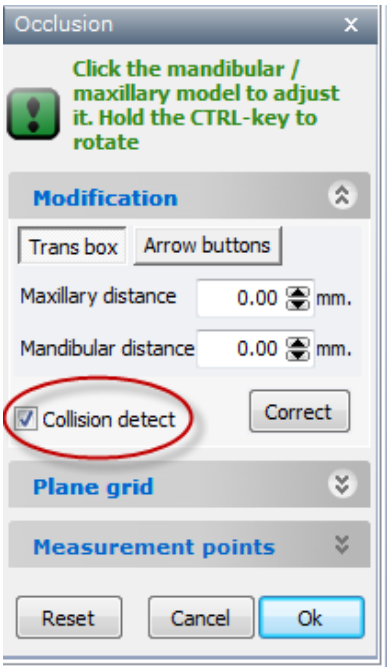
2) Define the distance between the two virtual casts to be moved apart according to the orientation plane. Negative values make the cast move up, positive – down. To edit the position of the plane, drag the control points correspondingly.

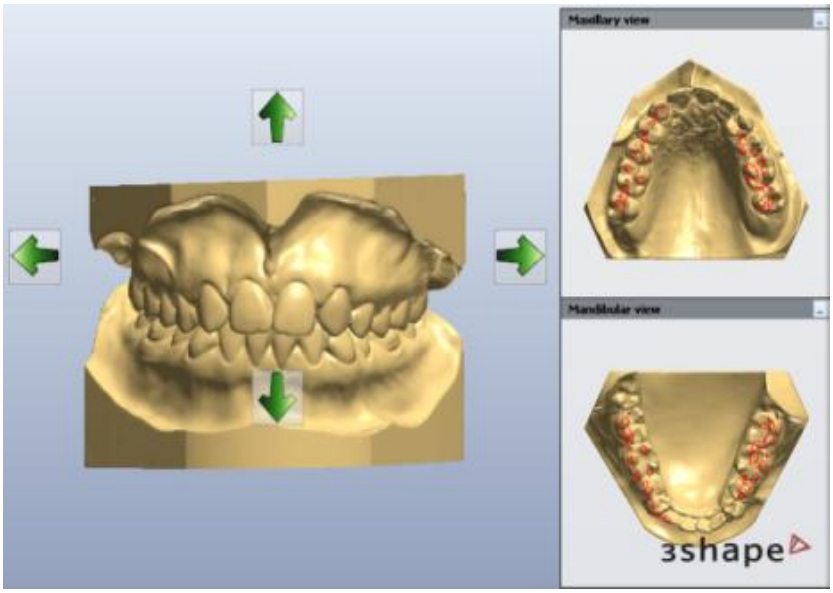
3) Click ***Clear*** to clear the control points that define current positioning of the orientation plane and re-define it.



Step 3: **Detect collisions and repeat step 2 trying to avoid them, if applicable.**

Hint: Use **Show as transparent f**unction (the Visualization toolbar) to visualize collisions more clearly.





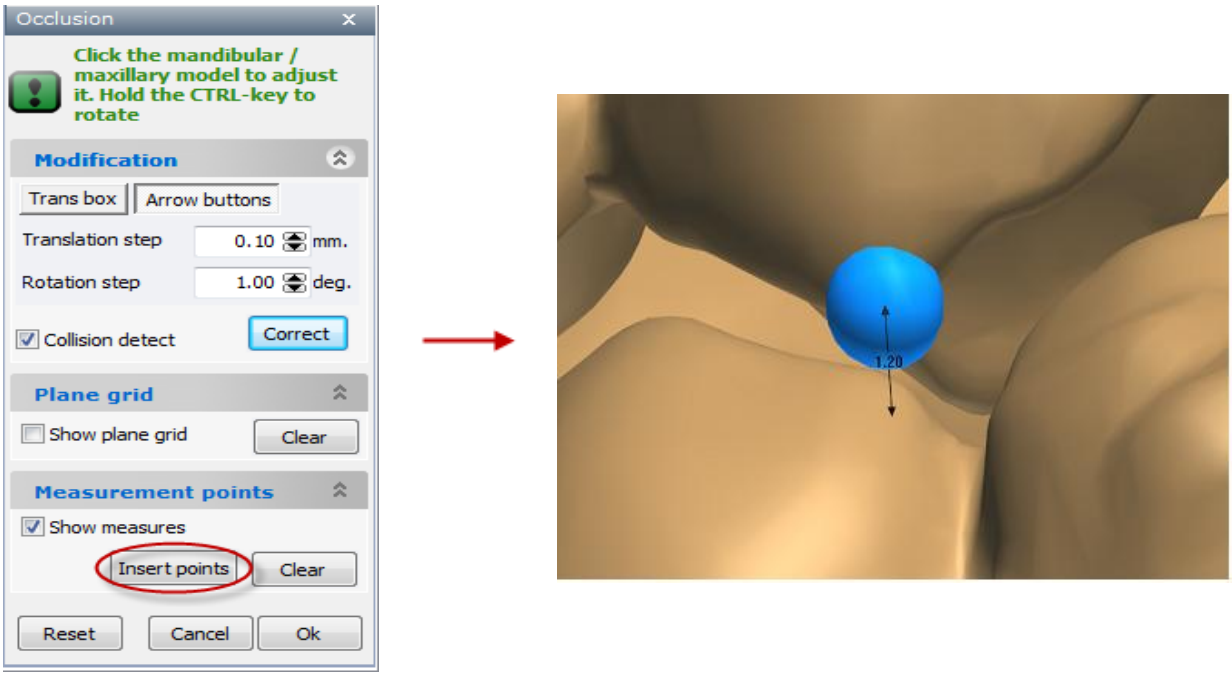
Click the ***Correct*** button to place the model in the initial position.

Step 4: Use the following buttons to control saving and clearing the changes applied:

- Click ***Reset*** to reset all changes and start aligning the virtual casts all over.
- Click ***Cancel*** to cancel the last change and leave the step.
- Click ***OK*** to save the changes and leave the step.

Step 5: Inspect the changes at specific points.

- In the **Measurement points** group click ***Insert points***.
- Click on the models to define points of interest – the difference at these points will be shown with labels on the models.
- When changing the model articulation the distance moved for every specified point will be shown as a measurement label on the models.



4.1.2 Alignment for Open Model Set

The **Alignment for open model set** function helps to align the upper and the lower casts for the open model. Follow the hints written on the form in green to perform the alignment.

You can use either the **Modification** section to insert the desired distances for the alignment (please see chapter Occlusion for more details) or the **Alignment by planes** section. To use the latter one, please click on the ***Set points*** button and place 3 points on each of the casts. Click the ***Apply*** button to perform the alignment. Click ***Clear*** to place the points all over again. Click ***Reset*** to start the alignment from the beginning.

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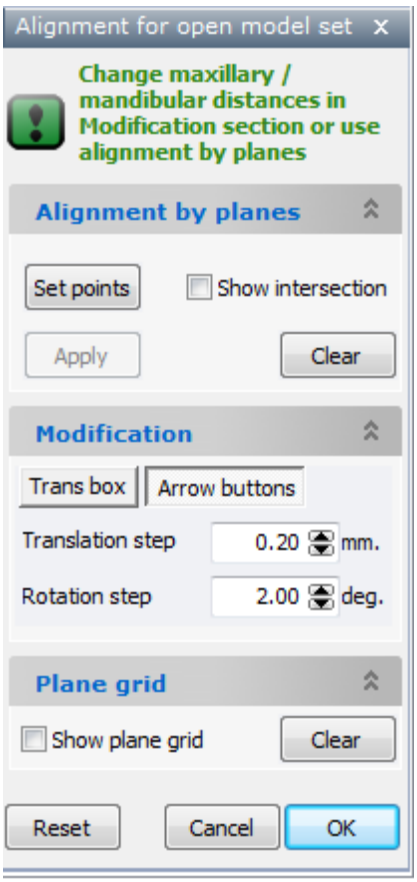
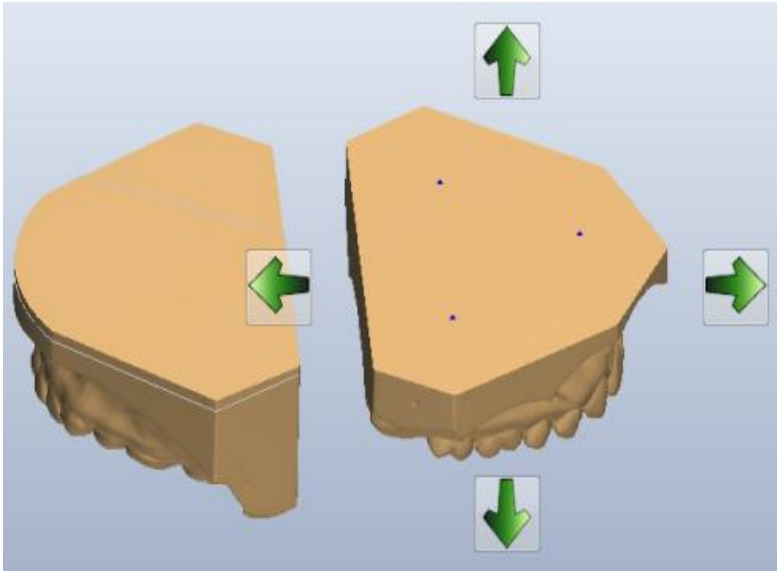


When the **Show intersection** checkbox is selected, you can view the gray intersection plane on one of the casts after you have placed the first three points on the cast opposite to it (see the image below).
Thus you can compare the two planes and align the models as required.

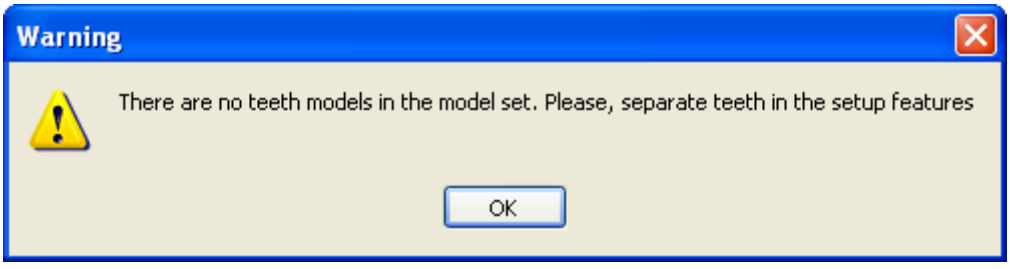


Select the **Show plane grid** checkbox to place the points on the cast to create a plane grid (please see chapter Occlusion for more information).

4.1.3 Virtual Setup

Virtual Setup is a feature simulating the orthodontic treatment in OrthoAnalyzer.

In order to move the teeth to simulate a treatment, a segmentation cut is automatically suggested and performed when the teeth are defined at the model Preparation step as described in Preparation for Maxillary Model chapter; otherwise, you will get the following warning message for unsegmented teeth when the ***Virtual Setup*** button is clicked:



At the **Virtual Setup** step, you can create different setups and subsetups with the teeth being extracted, moved etc, compare the created setups when desired and obtain a precise summary of all teeth movements.

The Virtual Setup function contains the four steps:

- 1/4: Choose setup
- 2/4: Extract teeth
- 3/4: Set objects
- 4/4: Move teeth

The four steps are described further.

Note: When you first click the ***Virtual Setup*** button, there appears an *IMPORTANT INFORMATION AND LEGAL DISCLAIMER* window also shown below. Please read the information carefully before proceeding.

OrthoAnalyzer 2012 IMPORTANT INFORMATION AND LEGAL DISCLAIMER

The functionality of the OrthoAnalyzer™ software allows you to manipulate a 3D visual model of a patient's dentition by dragging and moving individual teeth in the model, whereby you may explore how the visual appearance of the dentition may change if such tooth movements are implemented.

Please be informed that the OrthoAnalyzer™ software does not in any way attempt to check if any specific tooth movement or combination of tooth movements visualized in the software is actually possible to implement on the patient in real life.

Manipulations visualized in the software may not be possible to implement in real life, e.g. because the teeth may not actually be moved as visualized. A visualization created in the software of any tooth movements may also be inaccurate, e.g. because such movements, if implemented in real life, might cause more or different effects than as shown in the visualization created within the software.

Furthermore, the software does not contain any functionality attempting to check whether any such real-life implementation attempt might result in damage, e.g. to the patient's teeth or jaw. Any treatment attempt to implement on a patient a tooth movement or other manipulation visualized by way of the software should be planned and made only by a dental professional having with due diligence assessed whether the visualized manipulation can actually be implemented without causing damage to the patient.

The risks pertaining to any such treatment attempt shall be assumed entirely by the person carrying out the treatment.

3Shape A/S disclaims any and all liability for the results of any treatment attempts made on the basis of the visualizations generated within the OrthoAnalyzer™ software.

4.1.3.1 Choose Setup

The first step **Choose setup** offers you to create new setups (scenarios) and subsetups or choose the existing ones. Please follow the hints written in green on the form as shown on the image.

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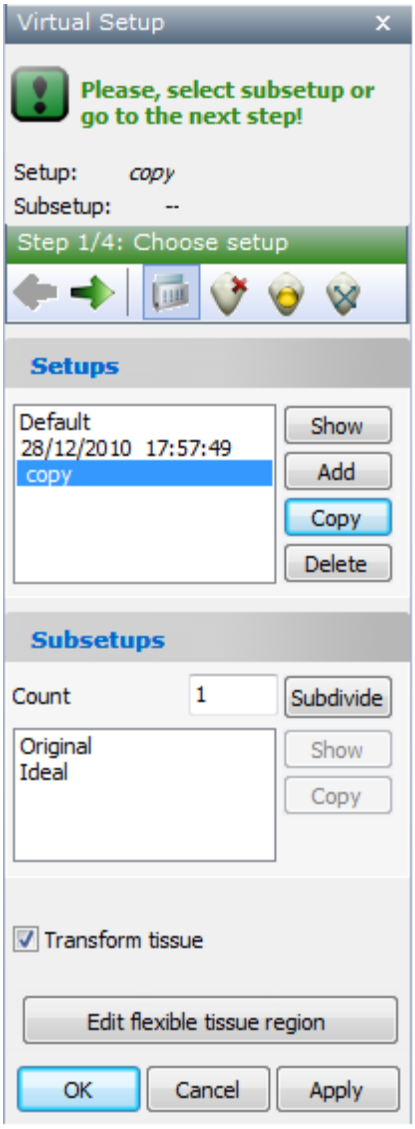
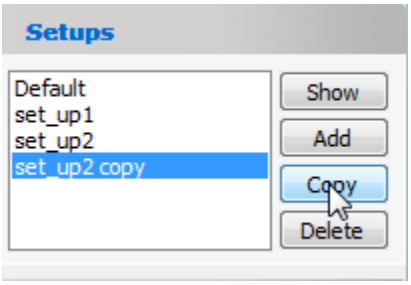


When you first come to this step the only setup available is the default one. You can create a new setup by clicking the ***Add*** button. Enter a name for the new virtual setup in the pop-up window and click ***OK***.

If you want to create subsetups for your scenario, enter the number of subsetups desired in the **Count** field and click ***Subdivide***. The program will automatically create the desired number of subsetups named Subsetup1, Subsetup2 etc. When you first go to the **Choose setup** step the only subsetup available is the Original and after you create your own setup or subsetups, there also appears the Ideal one, which is the final setup.

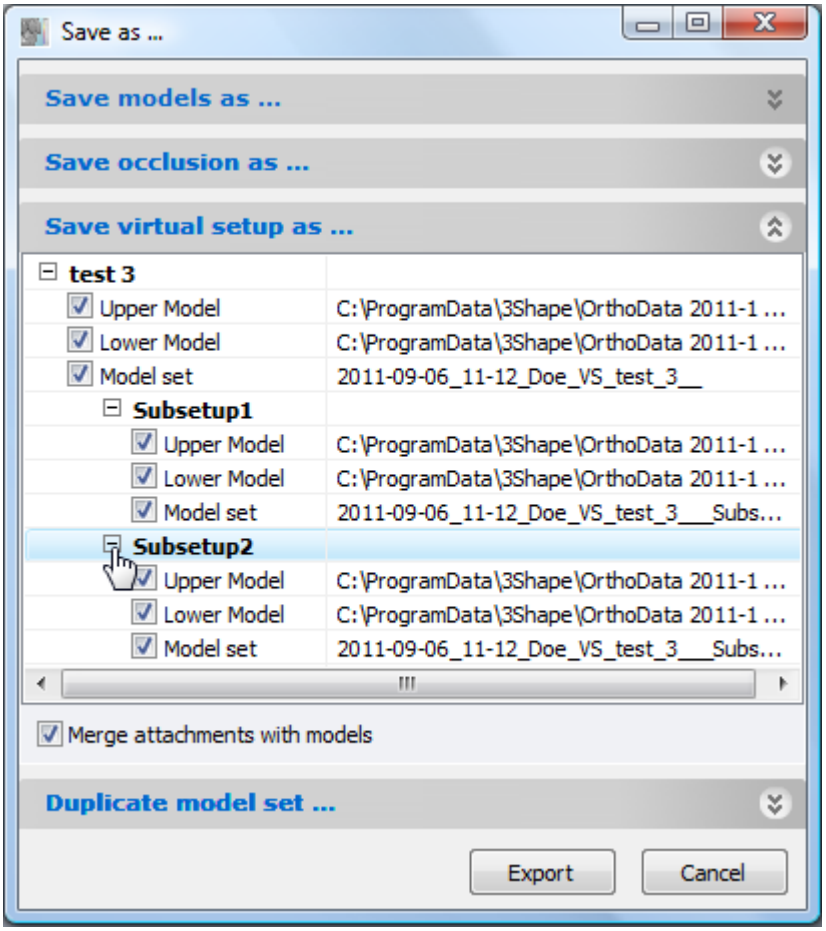
Click ***Show*** to view your setups, click ***Delete*** to remove them.

Select ***Copy*** to duplicate the existing setup. The new setup will be marked as a copy:



If you want the tissue (the pink material of the gums) to be moved when moving the teeth, select the **Transform tissue** checkbox.
With the ***Edit flexible tissue region*** button it is possible to determine the area of the gigiva with the splines under the teeth that will not be corrected during the step.
When done with creating or choosing setups, click either the ***Next step*** or ***Extract teeth*** button to proceed to the next, **Extract teeth** step.

It is possible to export all the models of the setups with subsetups on this step. In the *Save Virtual setup as* section you can observe the hierarchy of all the setups and subsetaps in the current project. You can fold/unfold the groups by clicking the dash:



4.1.3.2 Extract Teeth

At the second step of the Virtual Setup, the **Extract teeth** step, you can simulate teeth extraction.

To perform the operation, left-click on the teeth you want to extract, the selected teeth will turn red (in the session window and in the *Overview* form). To unselect a tooth, left-click on it once more. Click ***Apply*** to perform the extraction.

Click either the ***Next step*** or ***Set objects*** button to move to the next step.

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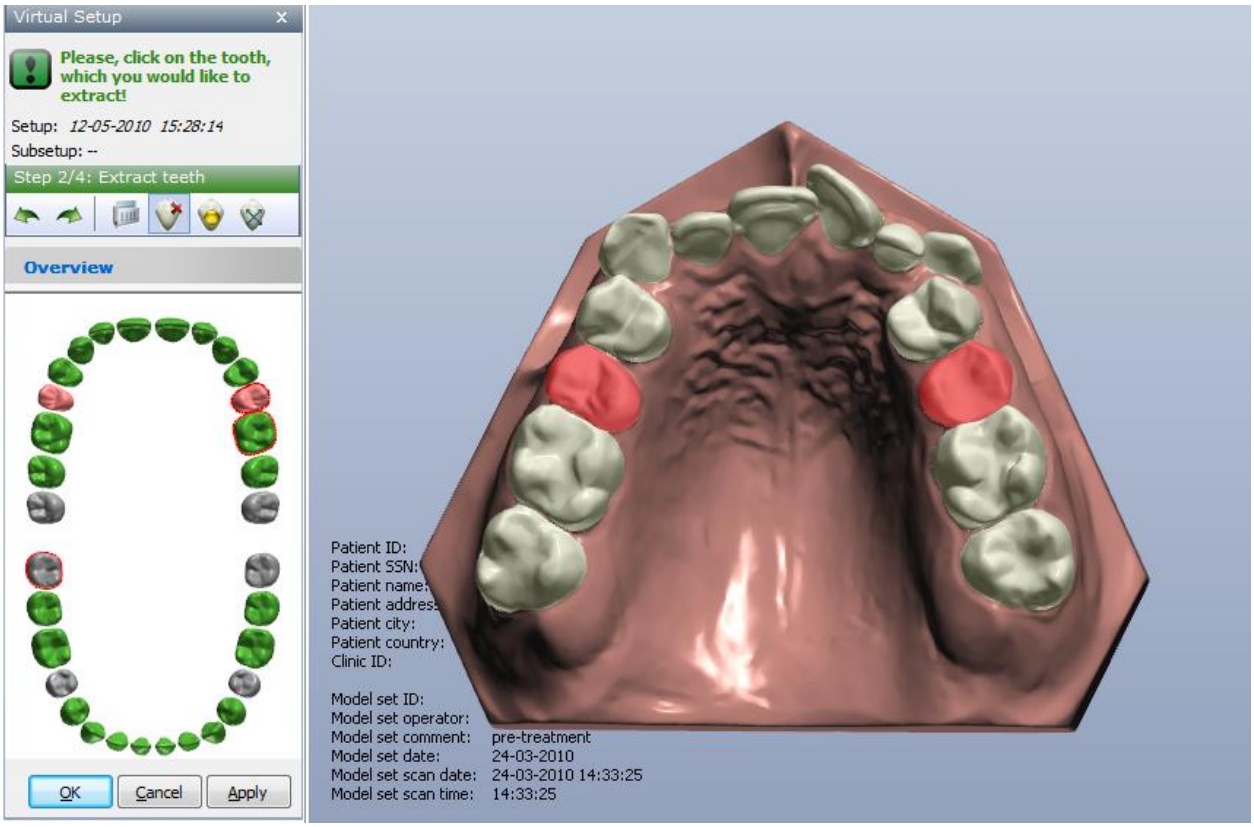
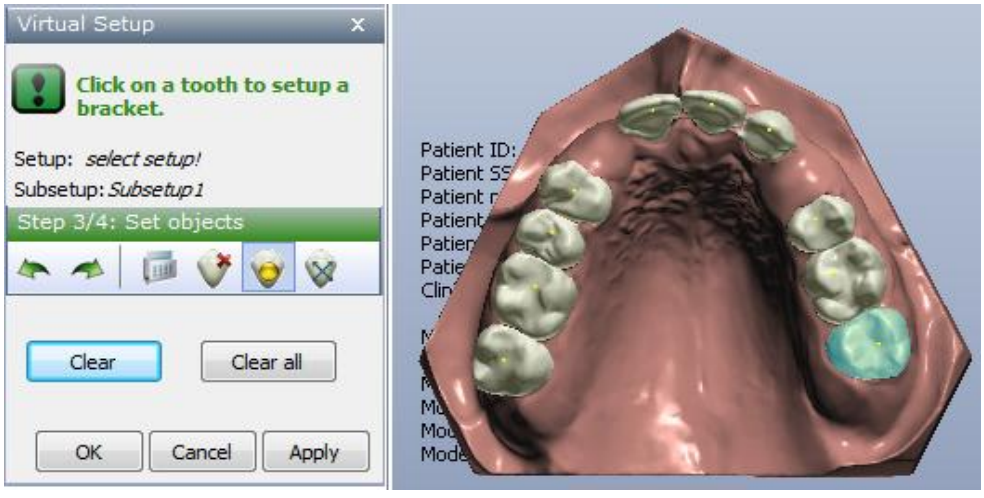


4.1.3.3 Set Objects

At the third step of the Virtual Setup, the **Set objects** step, you are asked to click on teeth to define a bracket position.



Click on the teeth one by one (the active tooth turns blue) and place the yellow points on each of them.
To clear the bracket from the selected tooth, click the ***Clear*** button, to remove all brackets, click the ***Clear all***.

Click either the ***Next step*** or ***Move teeth*** button to go to the next step.

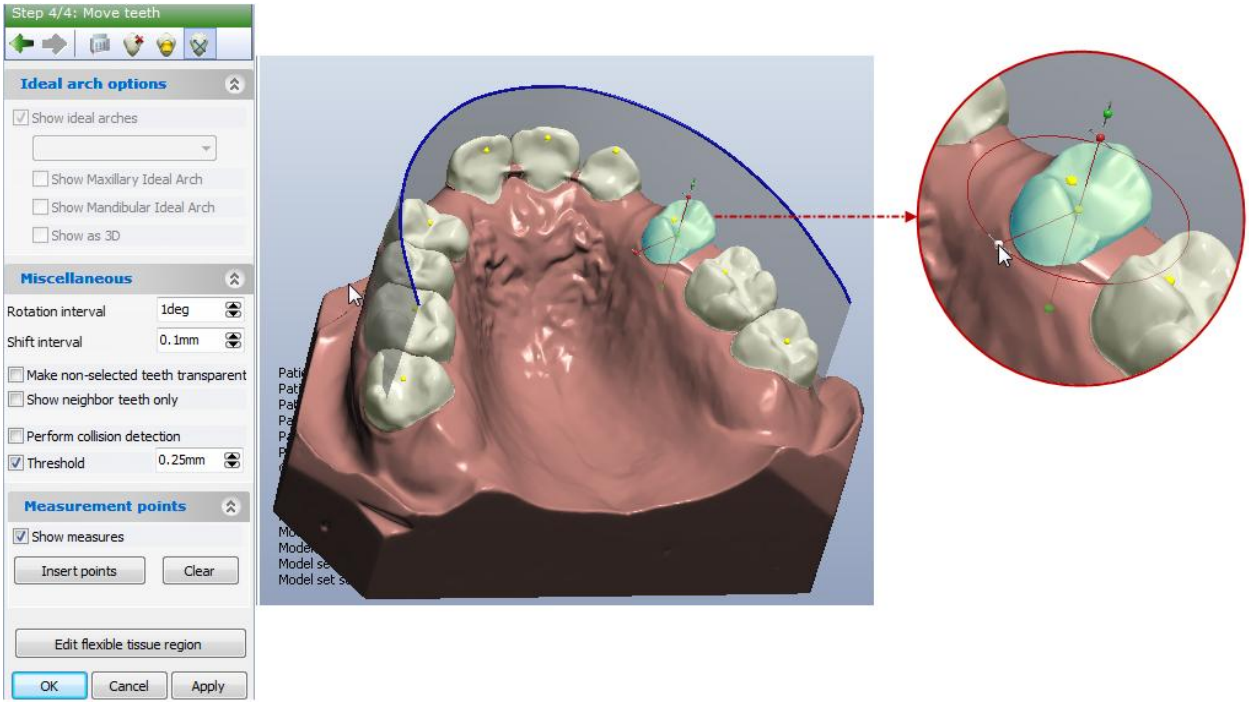
4.1.3.4 Move Teeth

The last step of the Virtual Setup, the **Move teeth** step, allows you to rotate and move teeth as desired. To select the tooth, click on it with the mouse or use the arrow buttons on the keyboard. The selected tooth turns blue. Double click on the tooth to activate the red and green control points that will help you rotate and move the tooth as shown on the image.

Step 1:Align the selected tooth

To do that, perform the following actions:

- **Rotate the tooth**: click on the red control points on the tooth or use the Left / Right arrow keys.
- **Move the tooth**: to move the tooth up and down click its green control point and drag it or use the Up and Down arrow keys; to move the tooth sideways click tooth and drag it or use the arrow + Ctrl keys.



Ideal arch options tab: To view the ideal arch, select the **Show ideal arch** checkbox. This will activate the whole tab and you can select the desired arch and choose to view the maxillary and mandibular arches by selecting the corresponding checkboxes. Select the **Show as 3D** checkbox to view the arch in the 3D format.

Miscellaneous tab: Setup the desired rotation and shift intervals in the corresponding fields.

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To have a better view of the selected tooth, you can mark the **Make non-selected teeth transparent** checkbox. You can also toggle the **Show neighboring teeth only** option.

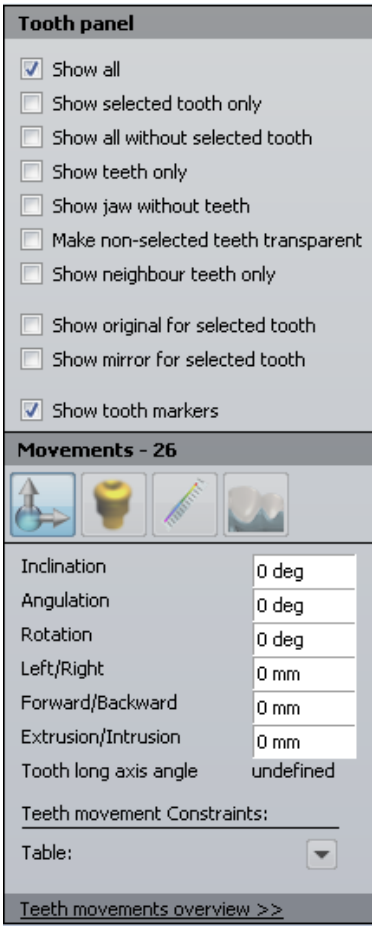
When the **Perform collision detection** checkbox is selected, you can view the collision of the casts. Choose the threshold of the collision if desired and enter the necessary values.

Measurement points tab: Select the ***Insert points*** option to trace the slightest changes of the tooth position. The numerical value over the point will indicate the change of the position in relation to its previous location.

With the ***Edit flexible tissue region*** button it is possible to determine the area of the gigiva with the splines under the teeth that will not be corrected during the step.

Step 2: Perform additional actions with the selected tooth

At the right top corner of the session window you will find the **Tooth panel** with different visualization options. By selecting/unselecting the first five checkboxes you can show/hide some specific parts of the model for better visualization.



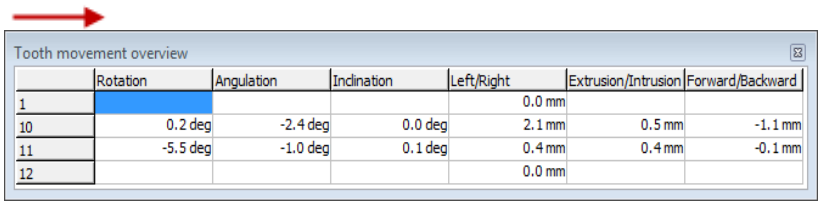
Use active tooth rotation center – When checked, rotates the model using the rotation centre of the selected tooth.

Show original for selected tooth – When checked, recreates a shadow of the selected tooth in its original position.

Show Mirror for selected tooth – When selected, shows a mirrored image of the selected tooth along the sagittal plane.

Show tooth markers – Shows/hides the markers on the teeth.

The **Movements** tab contains information about the operations performed on the selected tooth and the movements buttons. The number near its heading indicates the number of the tooth you are currently working with. After you have rotated or moved the tooth, the corresponding values appear in this tab showing exact measurements. These values can be changed directly in the tab by clicking on the desired field. Click the **Teeth movements overview** link to get a full report on the teeth manipulation:



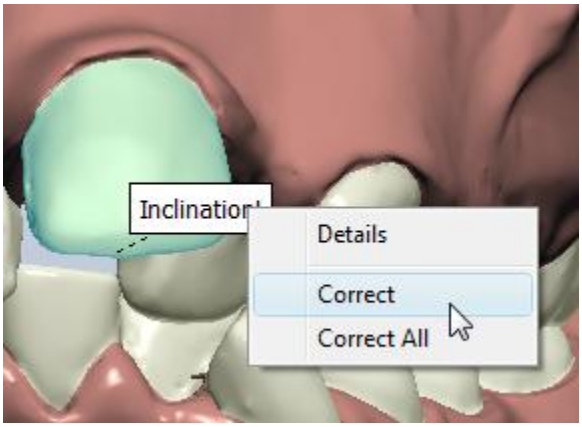
- ***Movements***

Allows to move the selected tooth to simulate the treatment. 3 Methods are available for teeth movements:
-Select the tooth and use the mouse to freely move the tooth;
-Select the tooth and use the keyboard arrows to move the tooth;
-Or manually edit the movement parameters in the respective table fields: **Inclination**, **Angulation**, **Rotation**, **Left/Right**, **Forward/Backward**, **Extrusion/Intrusion**.

Hint: Use the **Ctrl** key of the keyboard to select and move groups of teeth them synchronously.

Movements constraints for the treatment simulation can be set in Control Panel (for more information see the Ortho Control Panel manual) and chosen from the **Tooth movement Constraint** list. These constraints can be associated to tooth biomechanical and morphological rules, or to the mechanical properties of selected appliances.

While editing the **Movements** parameters it is possible to move the selected tooth further then the allowable limit if the 'visual feedback only' was selected in the Ortho Control Panel. In this case you get the popup warning message. Right-click it and select the appropriate option from the popup menu:



- ***Attachments***

Places the attachments to the selected tooth. To place the **Attachment** follow the next steps:

1) Select the tooth with the single click, the tooth turns blue.

2) Select the **Group** and **Attachment** type from the drop down menu in the **Attachments** tab that is set in the Control Panel (For more information see the Hearing Instruments Control Panel manual). You can also select the **Orientation** of the tooth from the given drop down list. Click on the tooth once again to place the attachment.

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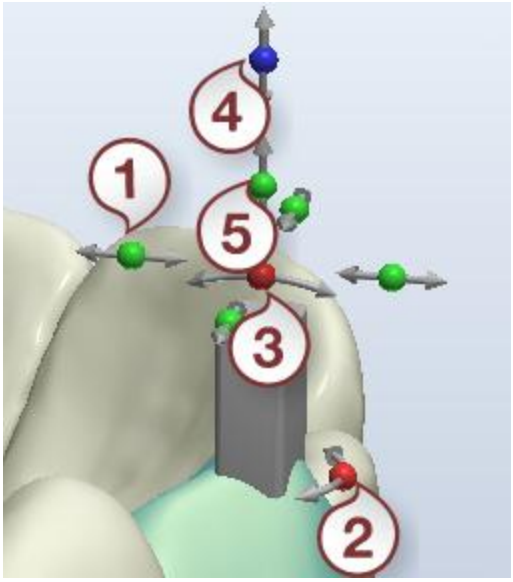
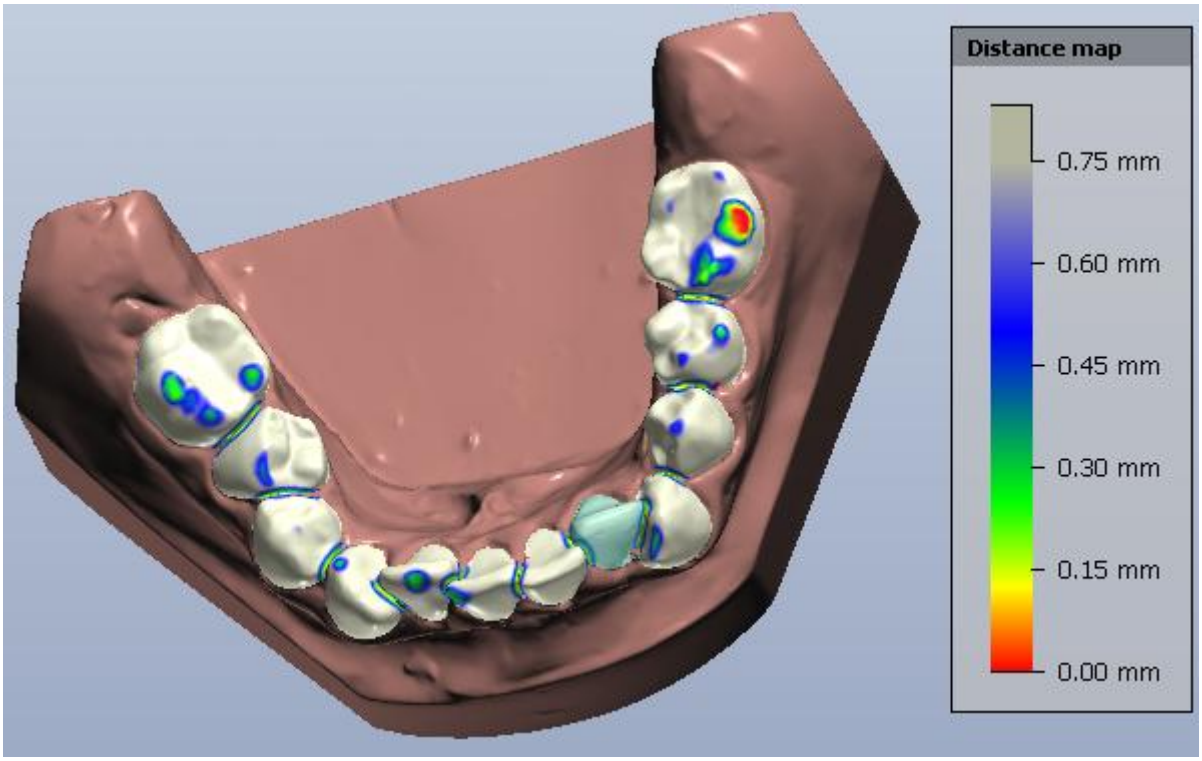


1. *Allows to squeeze/stretch the width*
2. *Rotates around the center axis*
3. *Moves back and forward*
4. *Positions the attachment deeper in the model*
5. *Allows to squeeze/stretch the length*

Mark the **Reverse direction** checkbox to turn the attachment into the opposite direction.

- ***Distance map***

Shows the selected teeth in the color scheme displaying the distance to the antagonist and neighboring teeth.
It is possible to edit the settings for the **Distance map** in the submenu. Mark the **Show Distance map** and the **Show scale** checkbox to display the *Distance map color scale* and the distance map respectively. It is possible to edit the **Max. value** of the color scale manually. Use the ***Set all*** button to show the **Distance map** for all the teeth. This option can be turned on during the other stages of movements so you can see the possible collisions of the neighboring teeth.



This option can be turned on during the other stages of movements so you can see the possible collisions of the neighboring teeth.
Clear all removes the color marking.

- ***Inter-proximal reduction (Stripping)***

Allows you to cut the selected tooth according to the parameters you enter.
In the ***Inter-proximal reduction*** section you can use the **Automatic** section to align the selected tooth automatically. Edit the **IPR Mesial** and **IPR Distal** parameters manually in the required fields. Otherwise, you can click the ***Calc*** button and strip the selected tooth automatically.

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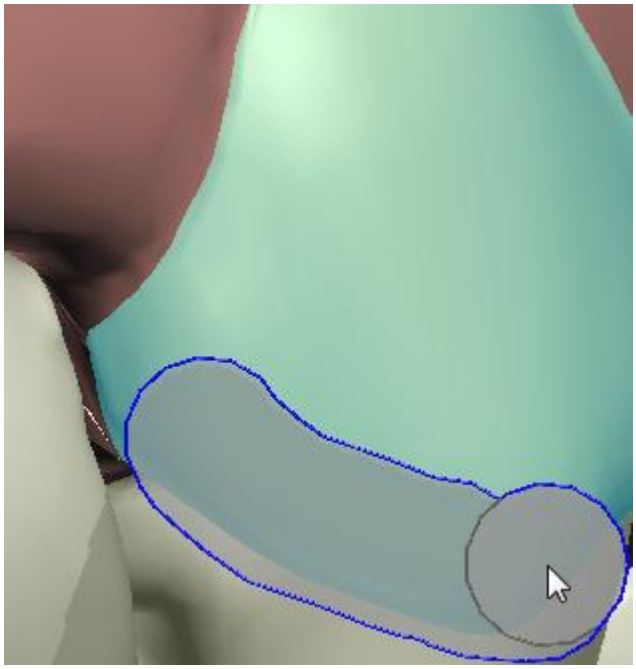


If you want to perform manual stripping, adjust the **Tool width** in the appropriate edit box. Select the desired area by clicking and holding the Ctrl button. Thus you mark the stripped section in transparent grey.
The "**saw" mode**, if checked, allows you to emulate a straight tool, while the simple mode allows you to mark the curved surface as well.

After you have selected a single tooth and have performed some changes on it you can use the green arrows in the left upper corner to **Undo/Redo** the changes.

Click ***Apply*** to apply the changes. You can go back and forward within the steps with the green arrow buttons . Click ***OK*** to finish the **Virtual Setup** step.

- **Applying the interactive tools to a virtual setup**

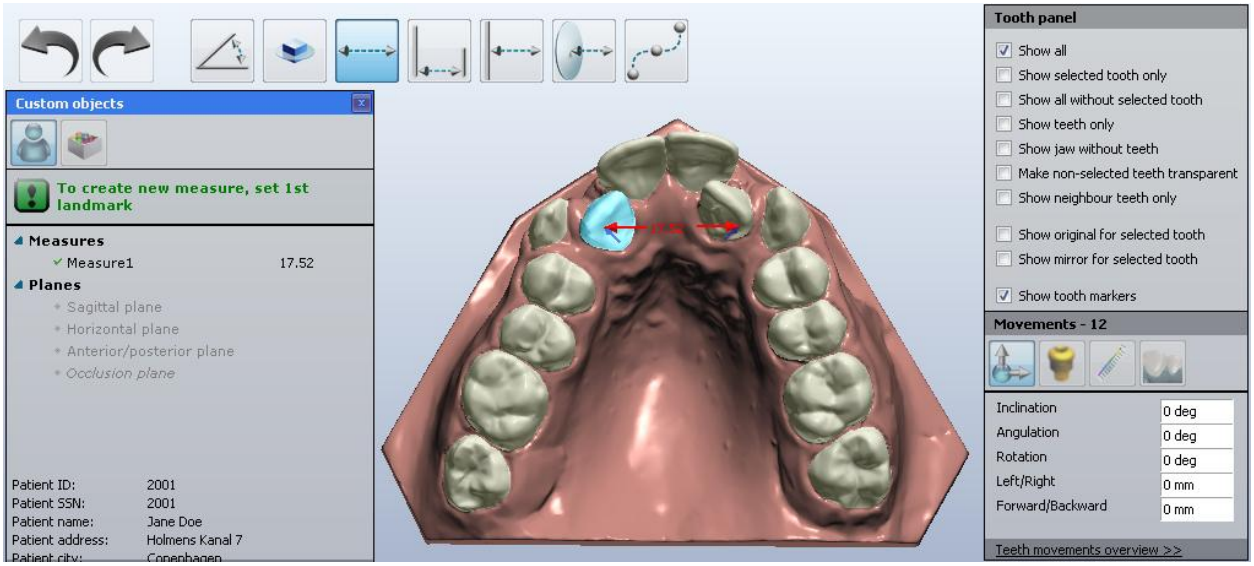
At the virtual setup stage, it is possible to call any of the interactive tools (see the section 3) e.g. to apply a predefined customized analysis to assess its results on the set up case, or simply to check critical values, distances etc.

Click the ***Measurements and Custom Analysis*** button and choose the relevant analysis. If a customized analysis was already defined, the analysis objects are displayed on the model at the position on which they were originally set but all distances and measures are update according to the virtual setup. You can also take any measures with the available tools.

Open the ***2D Cross-section*** tools, and apply the 2D measurements, including the symmetry guides to the virtual setup.

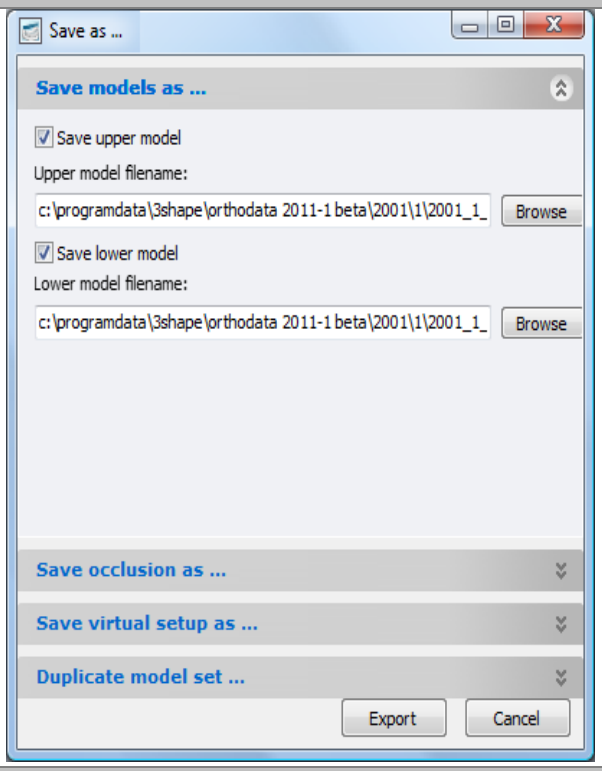
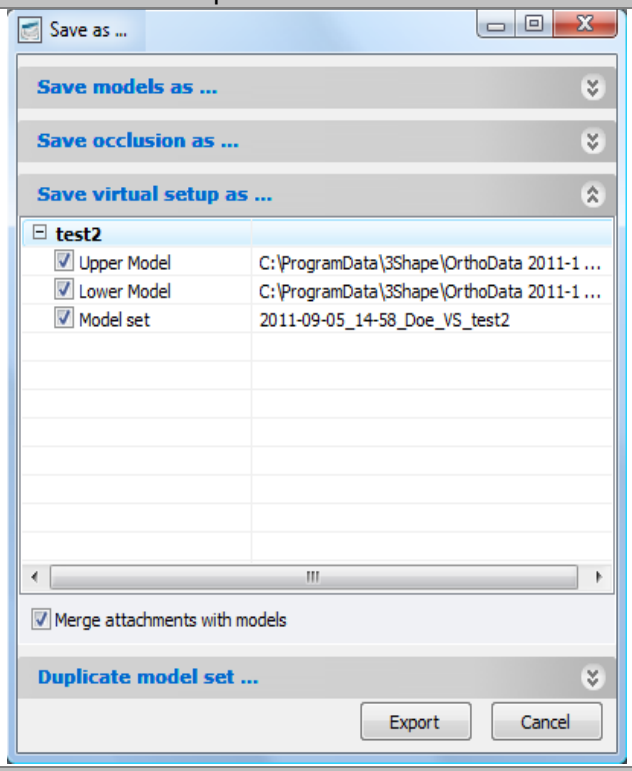
You can also apply the ***virtual articulator*** and assess the effect of the treatment plan on the patient's occlusion dynamically.

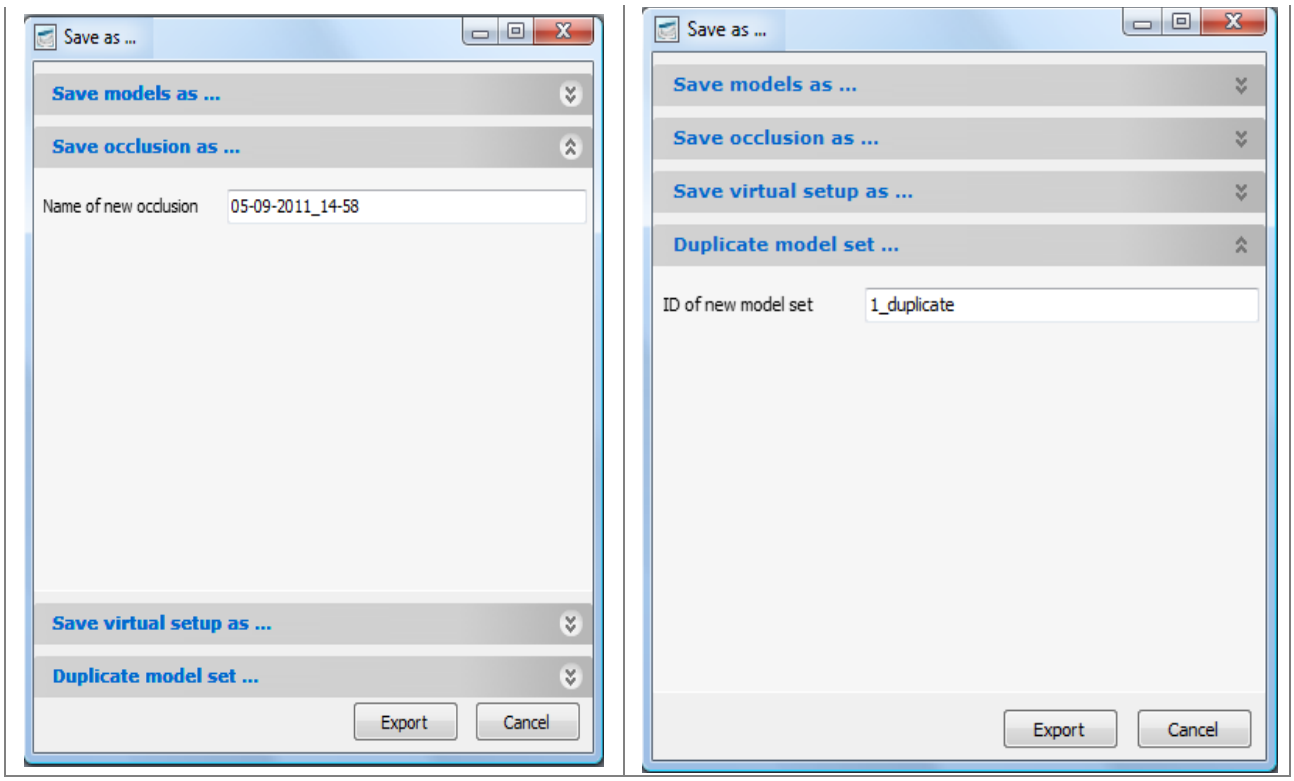
When the teeth are moved in the virtual setup, all analyses and measures are updated automatically.



Step 3: Export the ready model

The ***Export models as...*** button in the Main toolbar allows saving the models and setups to a specific folder. Left-click on it to get a *Save as...* window and export the model for the current setup.

The **Save models as...** option saves a copy of the existing upper and/or lower model(s) to the specified folder.	The **Save virtual setup as...** option has two options: you can save the upper and/or lower model(s) as models or as a model set. Mark the **Merge attachments with models** checkbox to export models with attachments.
	
The **Save occlusion as...** option saves the occlusions.	**Duplicate model set** saves the copy of the project on the current stage.



Note: When you first click the ***Move teeth*** button, there appears an *IMPORTANT INFORMATION AND LEGAL DISCLAIMER* window. Please read the information carefully before proceeding.

4.2 Configuration

The **Configuration** step is used to prepare the upper and/or lower model(s) for future manipulations and analysis.

The **Configuration** tab contains four steps:

- Setup maxillary model local origo
- Setup occlusion plane
- Preparation for maxillary model
- Preparation for mandibular model.

These steps are described in details below.

4.2.1 Setup Maxillary Model Local Origo

The aim of this step is to specify the local origin for the maxillary model of the virtual cast. These predefined reference planes namely the horizontal, sagittal and anterior-posterior, can be used as basis for the 2D cross section analysis.

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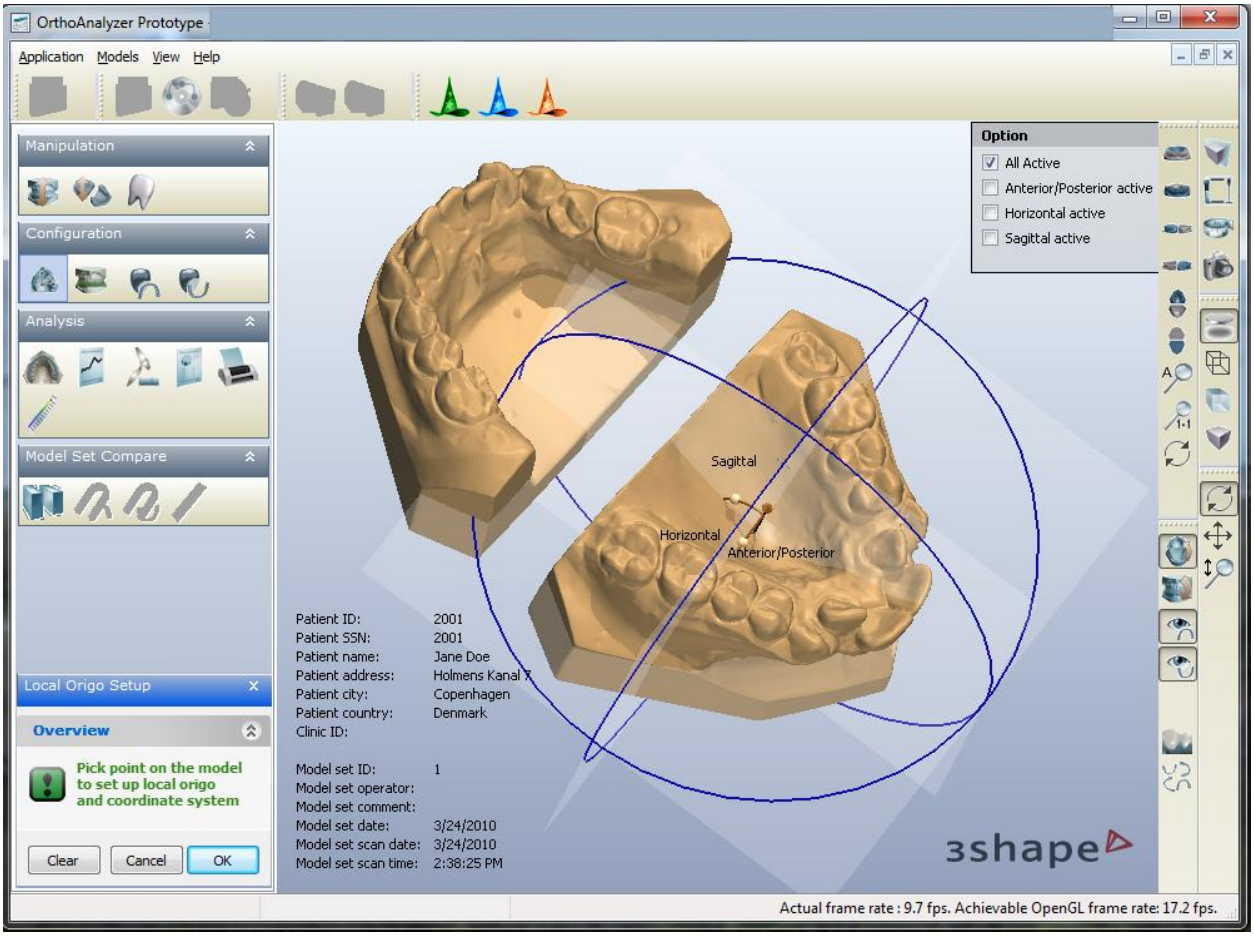
Note: these planes need to be predefined to be available as default positions for the 2D cross section analysis (section 3.3).

1. Click the ***Setup maxillary model local origo*** button in the **Configuration** tab.
2. Pick a point on the maxillary model to set up local origo and coordinate system.
3. Rotate the model using the mouse:

- Drag the control points (they turn yellow when activated) to rotate coordinate axis freely and set up the appropriate relation of the local origin planes.
- Drag the arrowhead to move the horizontal plane up or down.
- Drag the arrowhead to move the saggital plane left or right.
- Drag the arrowhead to move the vertical plane to or from.

4. When needed, you can click the ***Clear*** button to reset the positioning of the planes and start the process again. Click ***OK*** to save the changes made to the local origin and leave the step.

Note: All planes can be moved and saved as additional planes in the 2D cross-section toolbox.



4.2.2 Setup Occlusion Plane

The **Setup occlusion plane** step allows you to place the occlusion plane that is used for the 2D measurements at the Analysis objects step (**Custom spline 2D, Measure 2D** and **Distance 2D**).

Note: The occlusion plane need to be predefined to be available as default position for the 2D cross section analysis (section 3.3).
It is also required for the calculation of the tooth long axis at the preparation stage. (section 4.2.3)

To setup the plane, please follow the hints on the form (see the image below). You will be asked to place 3 landmarks on the teeth number 3, 8-9 and 14 (or equivalent depending on the chosen tooth numbering system):

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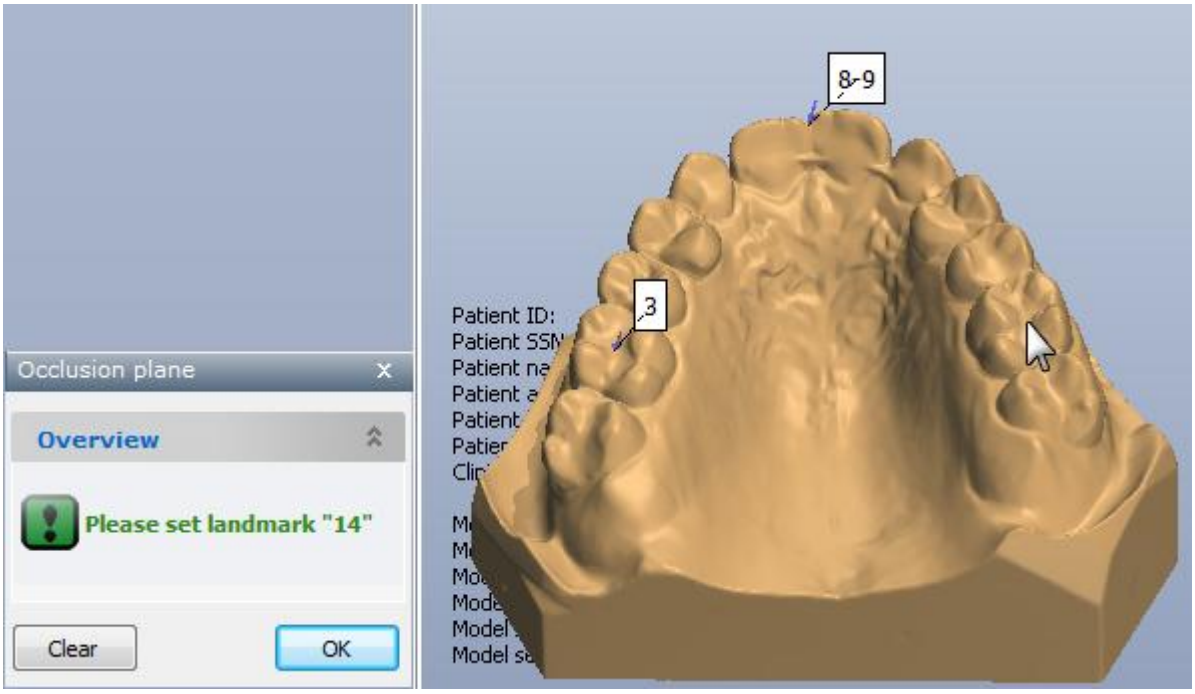
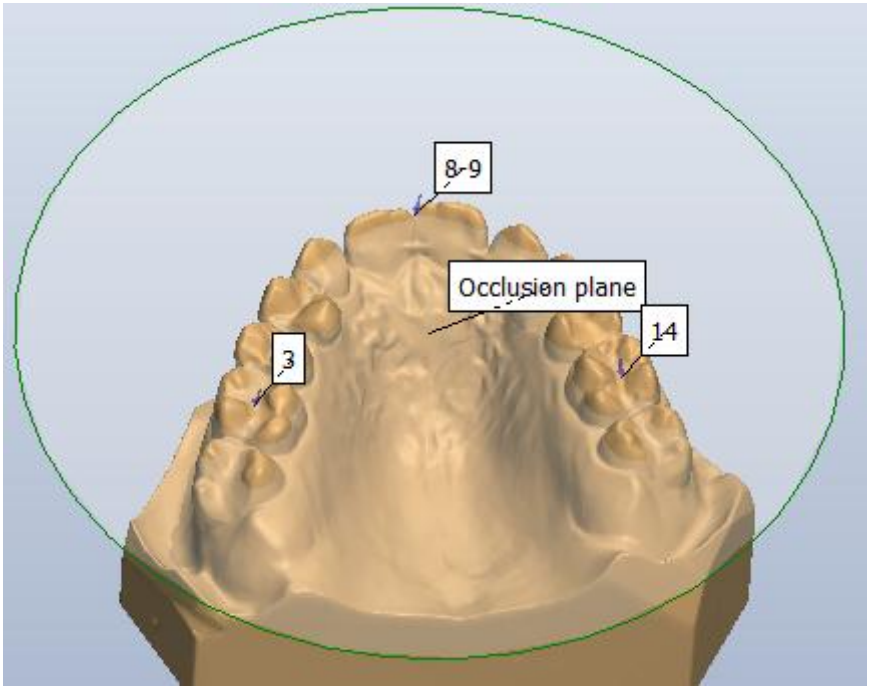


When done, the occlusion plane appears on the cast:



Note: All planes can be moved and saved as additional planes in the 2D cross-section toolbox.

Click ***Clear*** to reset the plane or click ***OK*** to save and finish the step.

4.2.3 Preparation for Maxillary Model

This step has 4 main objectives:

1) It lets you define the composition of the maxillary tooth row, including missing teeth to calculate the required space. You can also set up the width measurements for missing or non erupted teeth.
2) It also segments the teeth according to their definition so you can perform a virtual setup.
3) It defines the axis of the crown, which will be used as basis for all tooth movements at the virtual setup stage
4) It allows to edit position of the rotation center of the tooth.
Completing this step is crucial for the further analysis and for virtual setup operations to be successfully performed in the Function panel.

The **Preparation for maxillary model** option contains three steps:

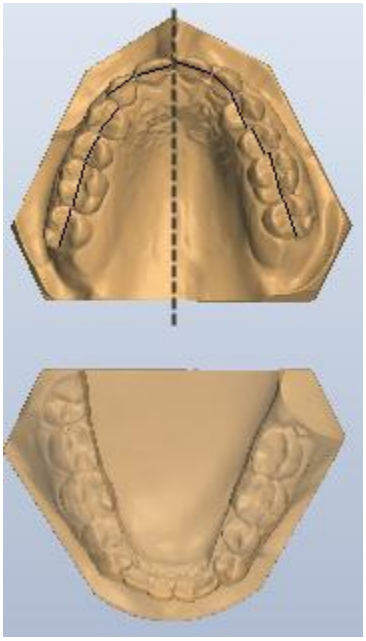
- 1/3: Set points
- 2/3: Define cut
- 3/3: Finish

These steps are described in details below.

4.2.3.1 Set Points

Set points - the first step of the preparation process.

Click on the ***Preparation for maxillary model*** icon, the program automatically brings you to the first step.



The system automatically presents the model of an open mouth view, making the inactive part of the virtual cast transparent (as shown on the image).

At this step, you have to place the distal and mesial control points on the teeth to setup the maxillary model. To accomplish this task, mentally divide the model into two parts along the median line, and indicate the distal points (aqua) on the surface of the tooth that is away from the median line, and the mesial points (purple) on the surface that is towards the median line, as shown on the image below. The width value for each tooth is displayed under **Width (2D)** under the Overview window.

To remove the tooth width selection, right-click on the control point and select ***Delete*** from the appeared menu.

To move the control points, click on the control point to activate the tooth and drag the point with the cursor.

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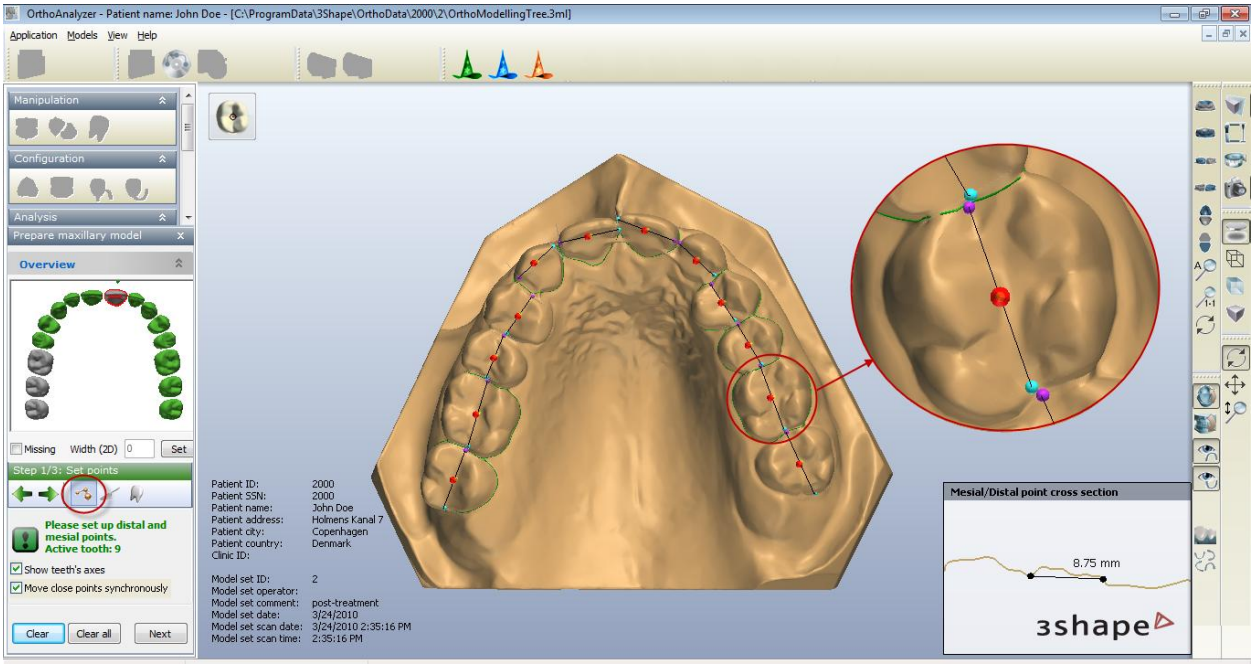
Click on the tooth and press ***Clear*** to remove the selected tooth width.

Click ***Clear all*** to remove all the width measurements.

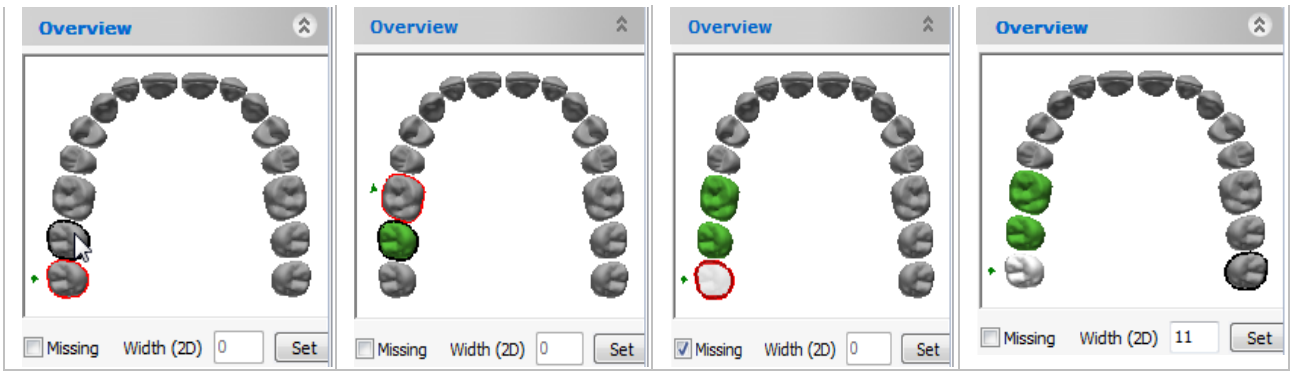


The user point-of-view should be the growing direction of the tooth. The default axis of the tooth crown is defined by the distal-mesial segment you define here. Normally it is the default top-view plane for the 2D measurements and for most teeth for 3D measurements. If some teeth grow in a non-standard direction, the plane for 3D measurements should be selected according to those individual directions.

Note: Taking a perpendicular view to each crown (using the right button of the mouse) helps to position the mesial-distal segment correctly through the center of the crown, therefore creating a more realistic tooth axis from the start.

Use the *Overview* window to navigate around the teeth or Ctrl + arrow buttons to change to next tooth::

The small green arrow indicates the tooth selected. Its number appears under Active tooth below. The tooth marked with cursor becomes circled black.	The next tooth which is automatically selected as 'active' is marked red. The tooth with completed selections becomes green.	To mark the missing tooth (shown as transparent), select the tooth and check **Missing**.	If the space left from missing tooth is intended for specific purpose (e.g. implant or non-erupted tooth), click the ***Set*** button and enter the corresponding tooth size value in the **Width (2D)** field. The virtual tooth becomes white.



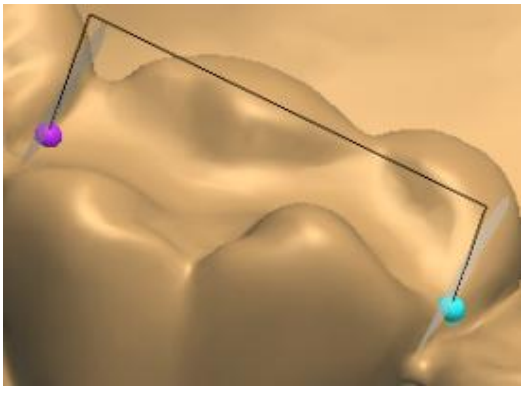
Additionally, you can manipulate the teeth with the right-click menu appearing in the Overview window when the cursor is positioned over a tooth.

The default measurements are done in 2D mode as the software emulates the traditional manual measurement method. The dental technician can still use the manually calculated data with the 2D tooth width. The measurement method can be toggled between 2D and 3D with the **Use 2D tooth length** checkbox located on System Settings page of the Ortho Control Panel.

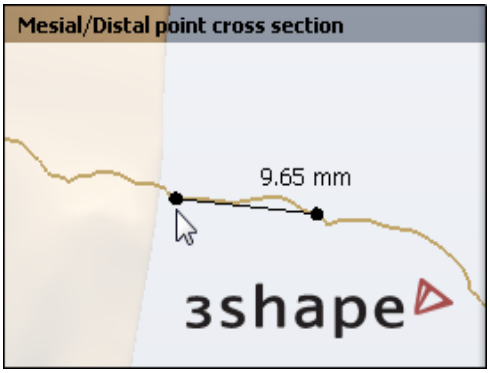
Show teeth's axes – when checked, displays the teeth axes in the form of the red arrows. The tooth axis can be changed with the help of the ***Set tooth normal*** button in the upper left corner of the session window. Its position is by default set by the user-defined mesial-distal segment.

Move close points synchronously – when checked, simultaneously moves the control points that are set close together on the spline (used at the Define cut step).

Use the *Mesial/Distal point cross section* window at the bottom right corner of the session window for the following tasks:



1. Drag the control points in the cross-section window to move them along the cross-section defined by the mesial and the distal points on the virtual model in the modeling window while



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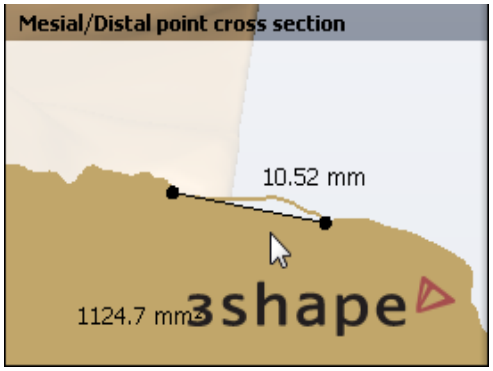
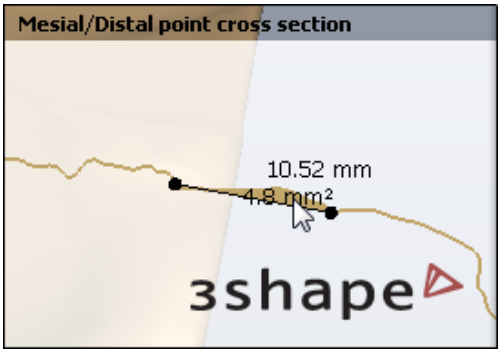


the cross section tooth width is calculated automatically .

2. To measure the cross-section areas of the tooth width segment, position the cursor over the area and see its value displayed while the field turns beige.



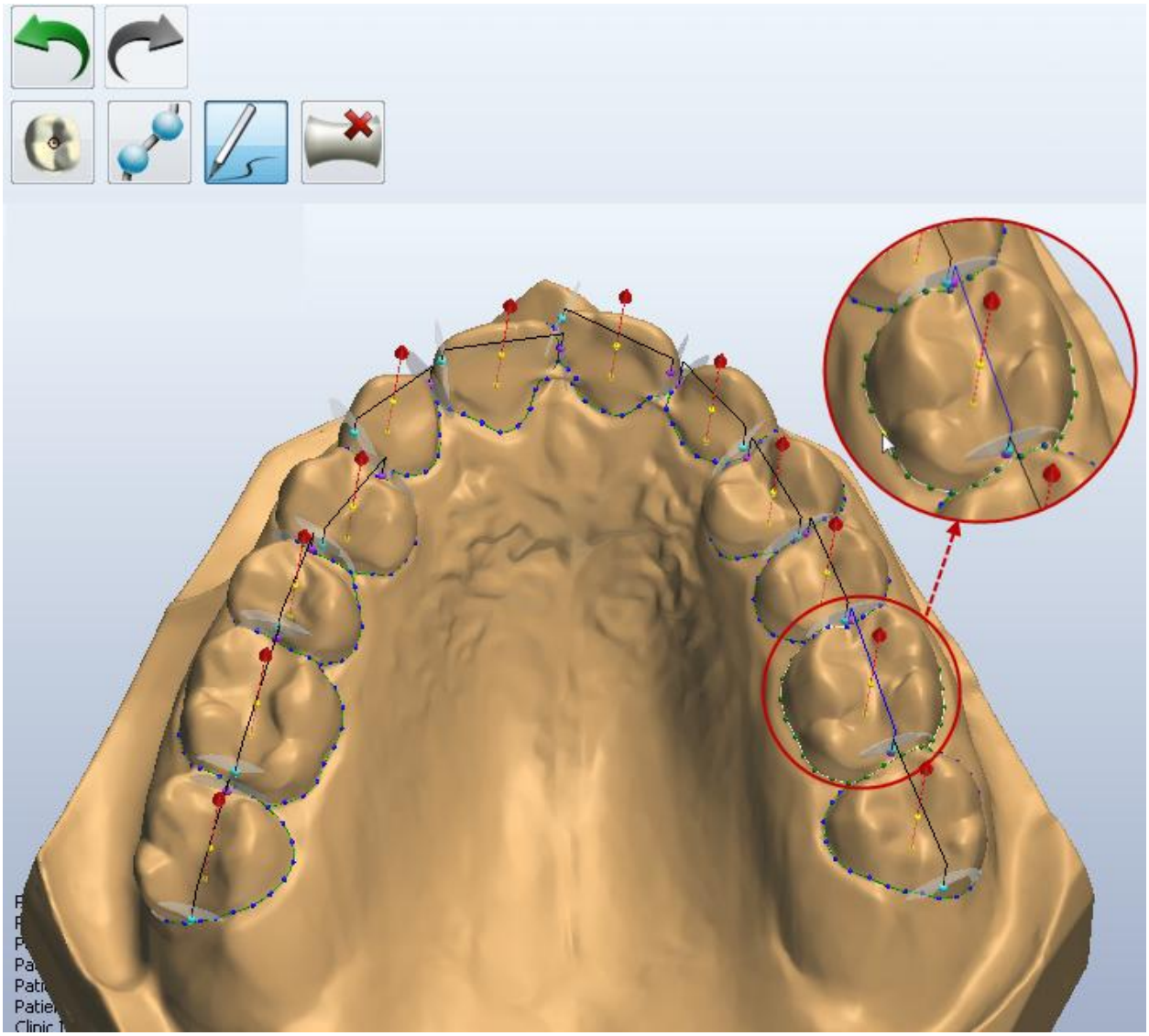
To move to the next step, you can click either the ***Next step***, ***Define cut*** or ***Next*** buttons.

4.2.3.2 Define Cut

At the **Define cut** step you can adjust the cut spline or recreate it manually. The program automatically creates the spline for each tooth based on the mesial/distal points placed at the previous step.

To adjust the spline, click desired tooth in the *Overview* window to activate it. The control points of the active tooth turn green from blue. Click on the control points (turn yellow when active) and drag them with the mouse to form the desired spline. Select the **Move close points synchronously** checkbox to move simultaneously the control points that are set close to each other. When you need to delete a control point from the spline of the selected tooth – right-click on it and select ***Remove*** from the appeared menu.

To create the spline manually or to edit it using the fast edit mode, you can use the buttons in the upper left corner of the session window – ***Segment tooth manually*** and ***Spline fast edit mode***.



Set Tooth Normal

When the **Show teeth's axes** checkbox is selected, the teeth axes become visualized in the form of the red arrows. The tooth axis can be changed with the help of the button in the upper left corner of the session window. To perform the operation, select the tooth to make it active, position the cast as desired and click the ***Set tooth normal*** button. Note that the default position of the tooth axis is defined by the mesial-distal segment.

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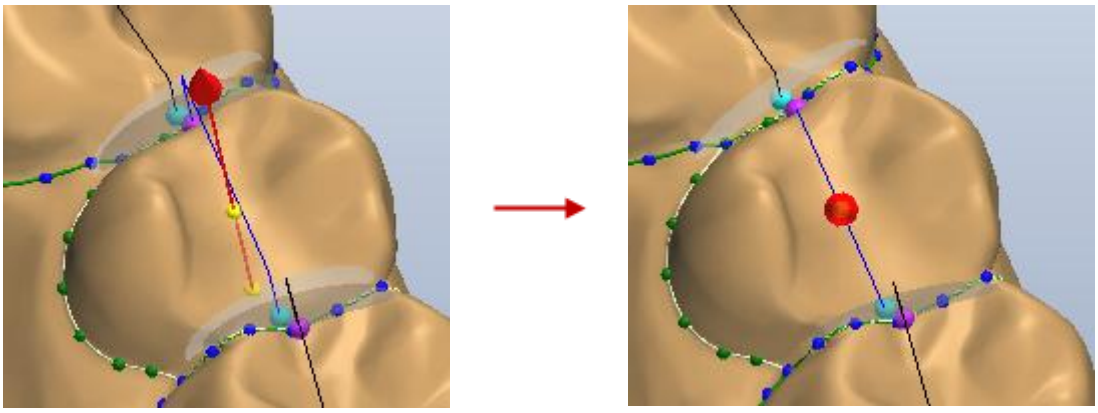
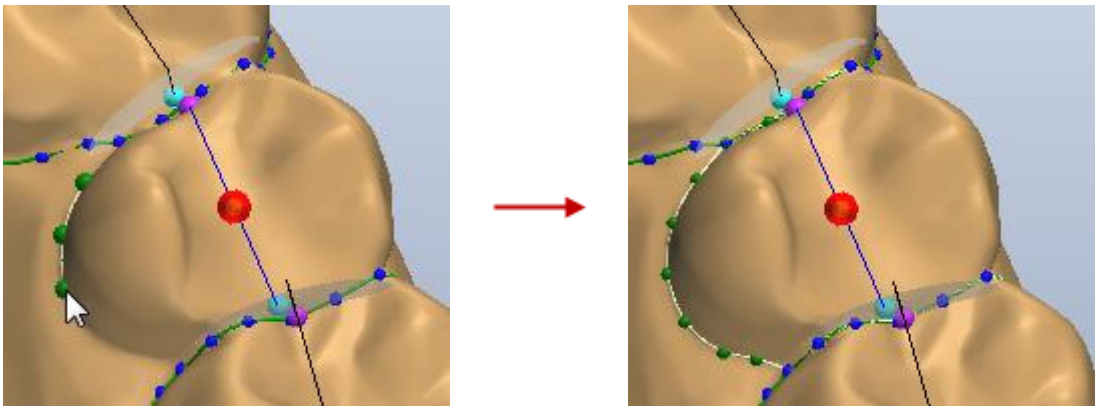


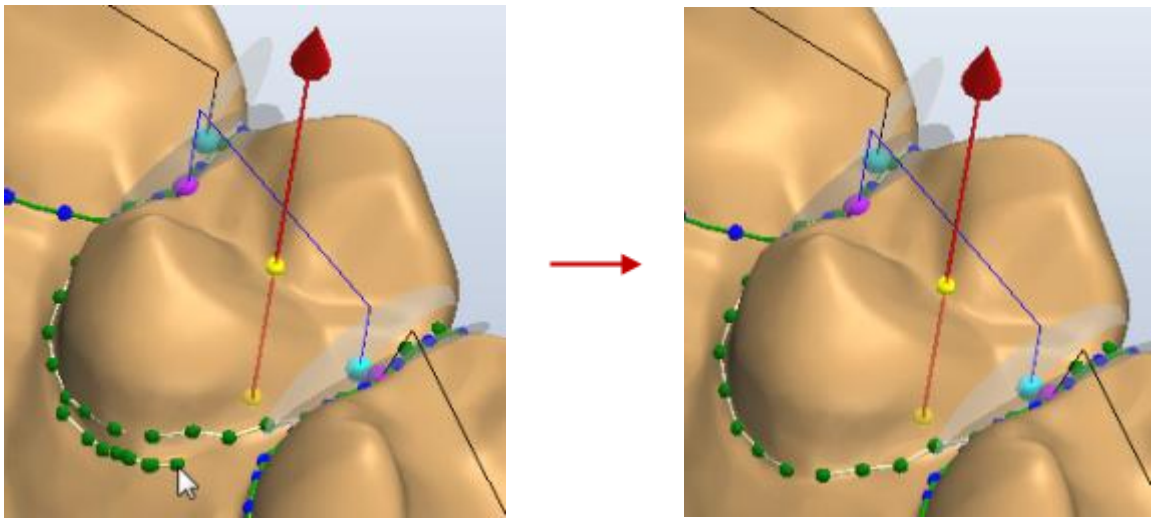
Segment Tooth Manually

To place a new spline, select the desired tooth to make it active and click ***Segment tooth manually*** button. The spline that has been placed automatically by the program will disappear and you will be able to place your own spline. Left-click on the tooth to place the control points. The last control point should be placed on top of the first one to close the spline.



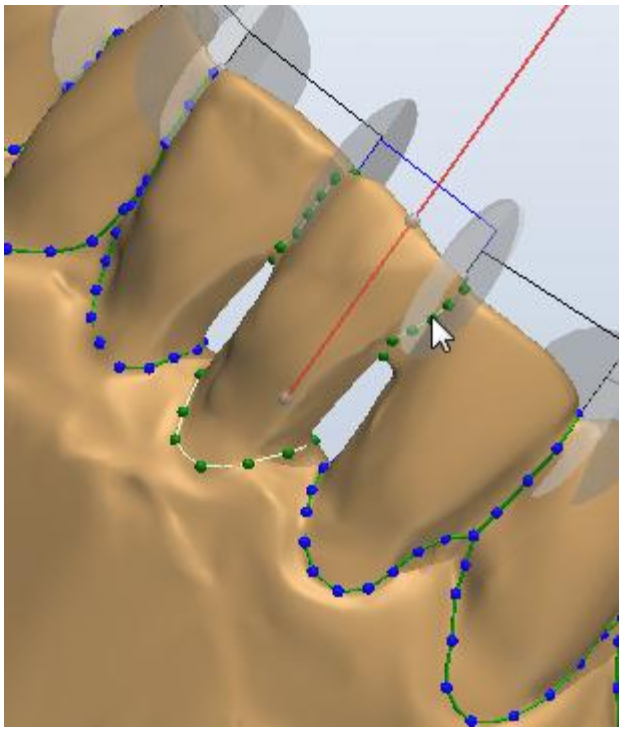
Spline Fast Edit Mode

To fast edit the spline, select the desired tooth to make it active and click the ***Spline fast edit mode*** button. Click and draw the new part of the spline that needs correction and the program will adjust the spline.



When you want to remove the preparation information from a tooth, click on the tooth in the Overview window and click the ***Clear*** button. The ***Clear all*** button removes the preparation information for all teeth at once.

Click the ***Find hole in the model*** button to identify the holes between the teeth for better separation. Select the tooth with the holes, click the section you want to place the spline on and click the ***Find hole in the model*** button. The separating splines are placed:



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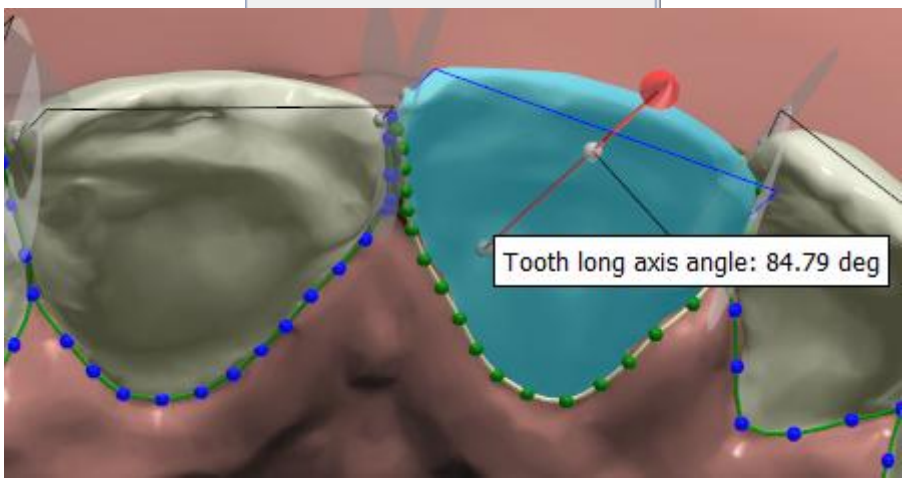
After you have performed actions with a single tooth you can use the green arrows in the left upper corner to **Undo/Redo** the changes (or the combination of Ctrl + Z/Ctrl + Y).

To move to the next step click either the ***Next step, Next*** or ***Finish*** buttons.

Hint: Due to difficulty to access interproximal areas for most orthodontic cases it can be necessary to adjust the suggested segmentation manually. In case segmentation fails for one given tooth, it is recommended to start by repositioning the distal and mesial points at the first step. If this is not sufficient to solve the segmentation issue, it can also be very useful to inspect the cutting splines alone on screen (disable the ***Show maxilla*** or ***Show mandible*** button respectively from the Visualization Toolbar and adapt the spline using the **Spline Fast Edit** mode.

Tooth long axis angle
When an occlusion plane has been created (see section 4.2.2), it is possible to check the angle of the selected tooth's long axis according to this plane.
Select the **Show tooth long axis** option from the list, the axis angle for the selected tooth



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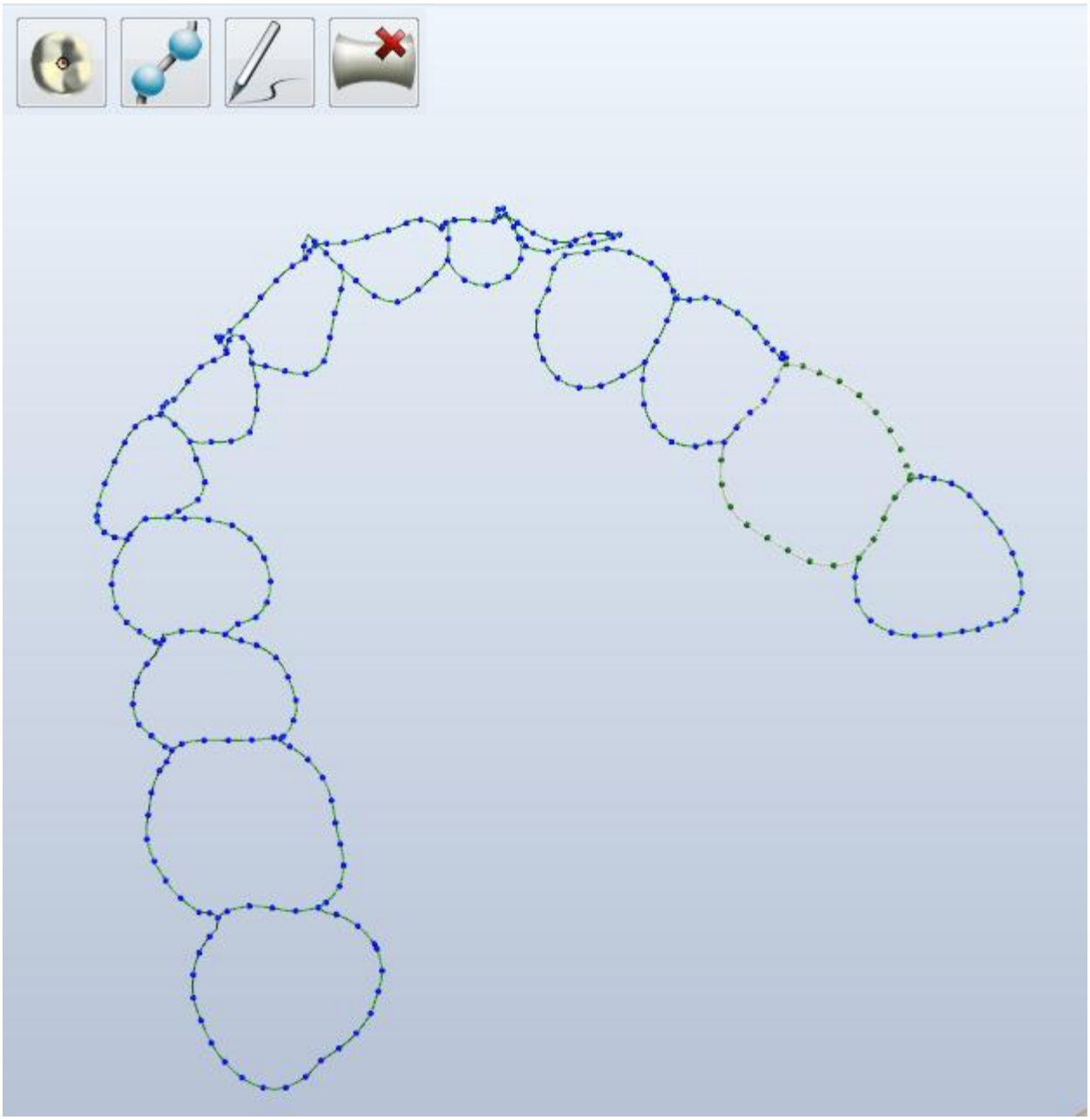
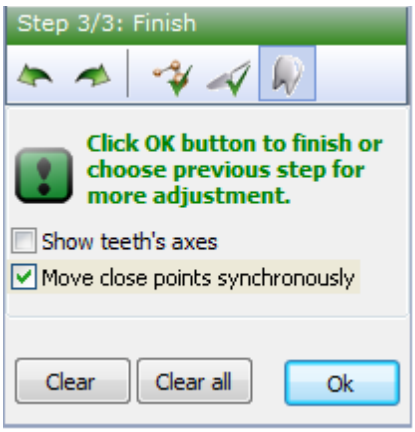


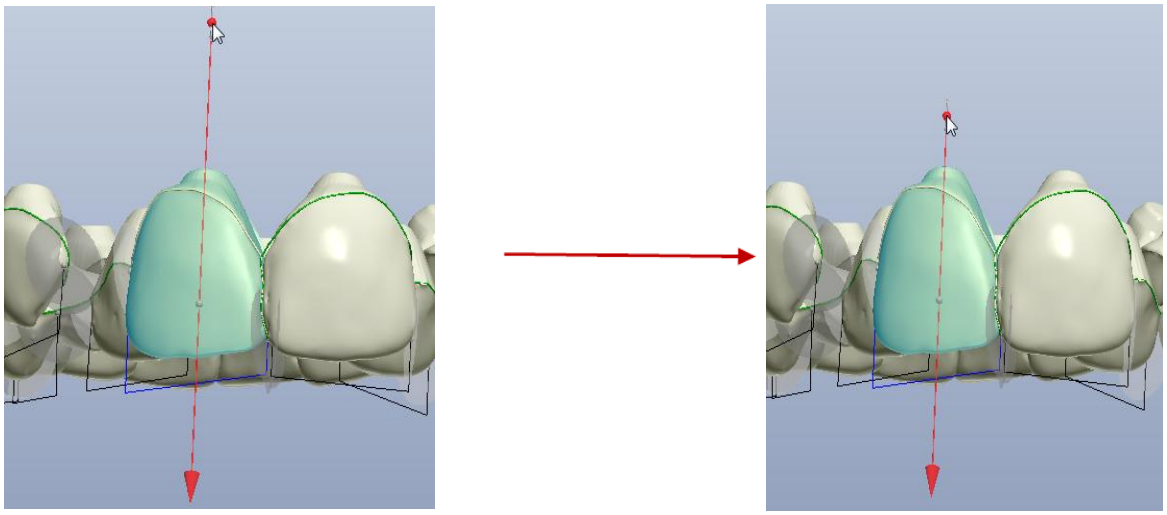
4.2.3.3 Finish



At this last step of the **Preparation for maxillary model** option you can evaluate your model and choose to go back to the previous steps if more adjustments are needed.
To go back to any of the previous steps, click on the step icon or on the green arrow buttons .

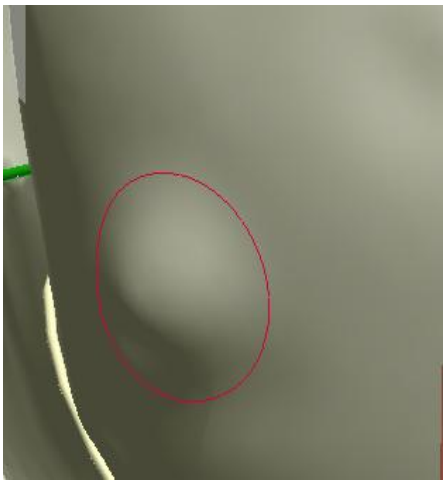
Click ***OK*** to finish the **Preparation for maxillary mode**l.

You can also edit the position of the rotation center of the selected tooth. Select 'show teeth only' and choose the tooth from the overview or directly on the 3D model. Select the rotation center with your mouse and drag it to adjust its position.



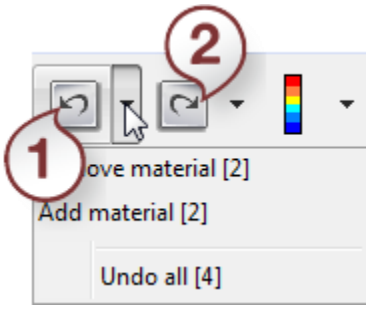
The ***Sculpt*** option becomes available at the last step. It allows trimming the teeth after the separation. It is possible to remove surface on the selected area.

Note: You have to select the tooth first to activate the ***Sculpt*** option.

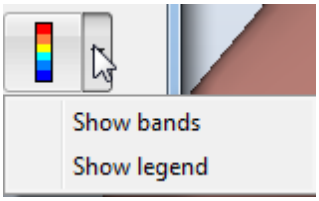


Click the ***Add*** button in the *Wax knife settings* section to add some material to the scan. The target area circle is marked **red**.

Select the ***Remove*** button to delete extra material or click the ***Smooth*** button. The target area circle is marked **blue** and **green** respectively. Adjust the **Radius** and **Level** of the marking circle by pulling the corresponding slide bars. It is possible to use the already customized settings from the list of six variants. Activate the desired mode by clicking at its number in the list. To change the setting for the mode set the parameters in the Wax knife settings section and click the ***Save*** button. Mark the **Show target area** checkbox to display the marking circle.

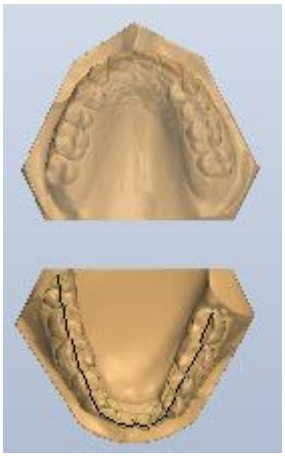


It is possible to ***Undo* (1)**/***Redo* (2)** the last operations. Click the black arrow to observe the history of your actions. Click ***OK*** to save the changes.



You can use the ***Difference map*** to observe the changes you perform in color. Click the black arrow to open the ***Difference map*** options.
Show bands - Makes it easier to see slices on difference map with the same deviations.
Show legend - displays the *Color scale*.

4.2.4 Preparation for Mandibular Model



This step defines the composition and segmentation of the tooth row of the mandibular model. The workflow is similar to the described in the Preparation for Maxillary Model chapter.

4.3 Analysis

This functional tab serves the purpose of comparing particular patient models to statistically obtained ideal deviations in order to plan the treatment accordingly.

The **Analysis** tab contains six steps: **Dental arc analysis, Analysis reports, Overbite/Overjet, Questionnaires, Generate report and Occlusion map.**

4.3.1 Dental Arc Analysis

The **Dental arc analysis** function provides a compilation of the tooth width calculations based on the selections made in the **Configuration** tab and compares it with the customer-defined ideal curve shape.

When you click the ***Dental arc analysis*** button, a dialog box with the *Overview* window and the *Ideal Curve and Wire Length* tab appears.

- ***Overview* window**

The teeth of the maxillary and mandibular right quadrants are marked red. The teeth of the maxillary and mandibular left quadrants are marked green. Missing teeth are marked grey.

The green arrows along the dental arcs indicate the full arch width calculated out of the individual tooth widths of the teeth marked in the previous steps. Both types of measurements appear next to the teeth and the arrow in mm.

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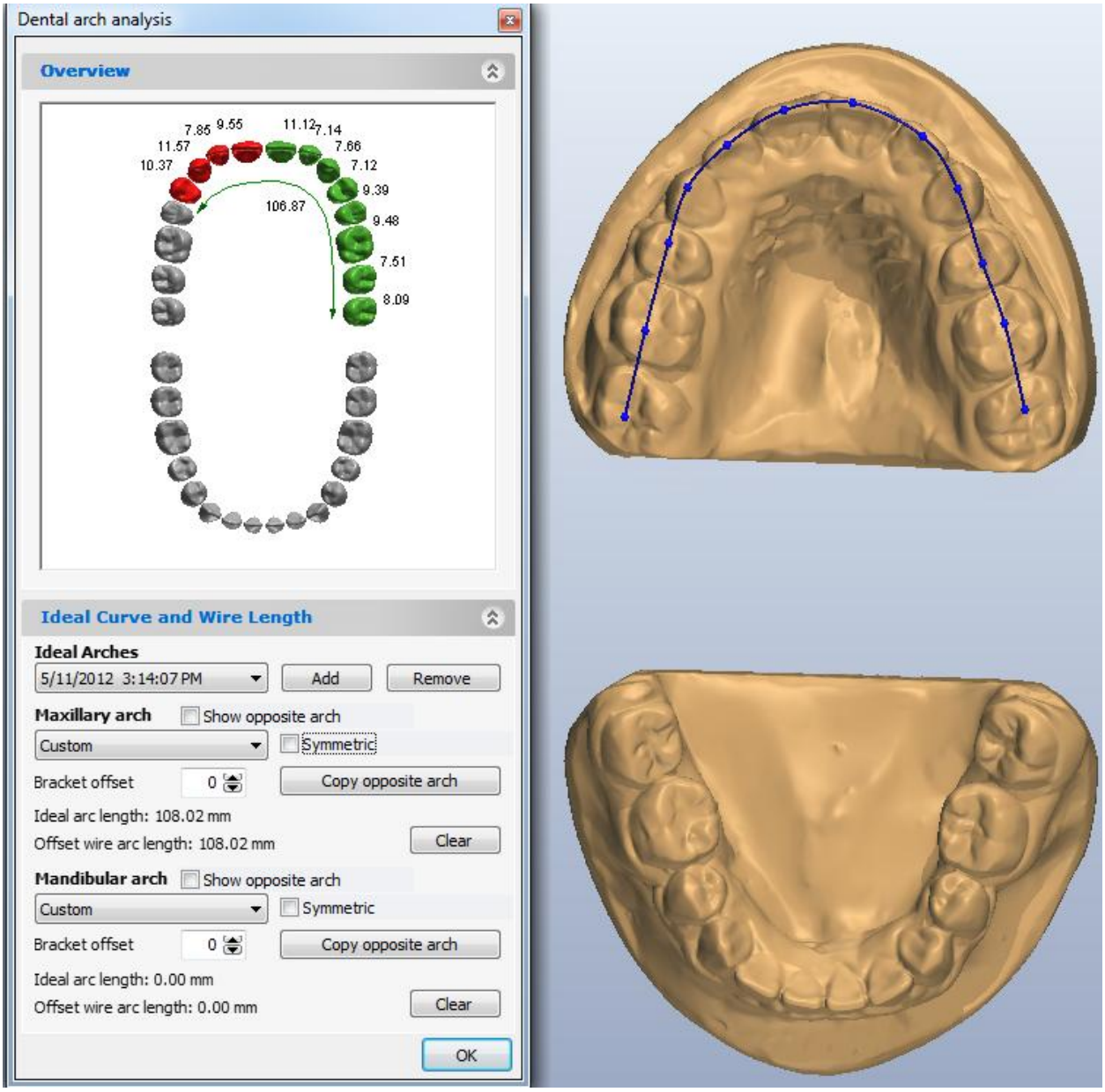
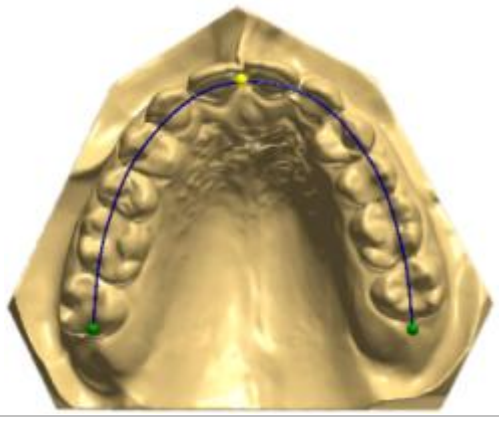
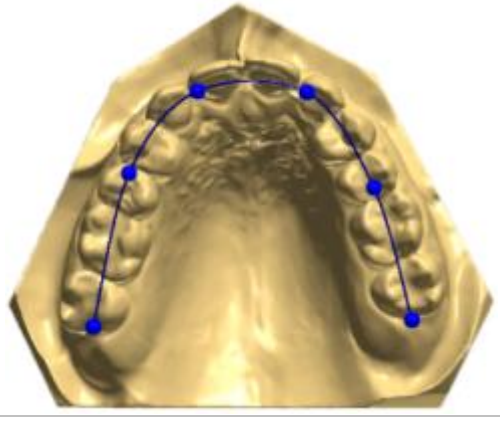


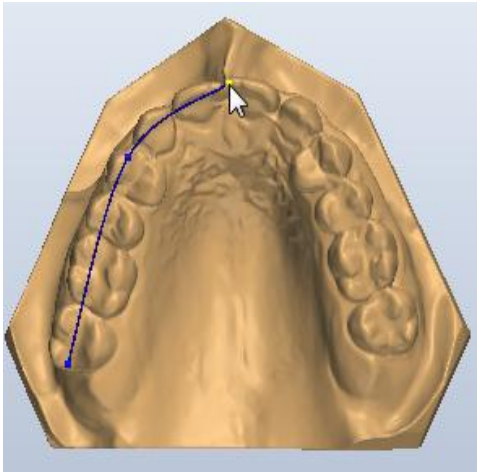
- ***Ideal Curve and Wire Length* tab**

Before defining an arch, you have to click the ***Add*** button and enter a name for your new ideal arch (arches). The new arch will appear in the **Ideal Arche**s drop-down list. You can delete the selected arch with the ***Remove*** button.

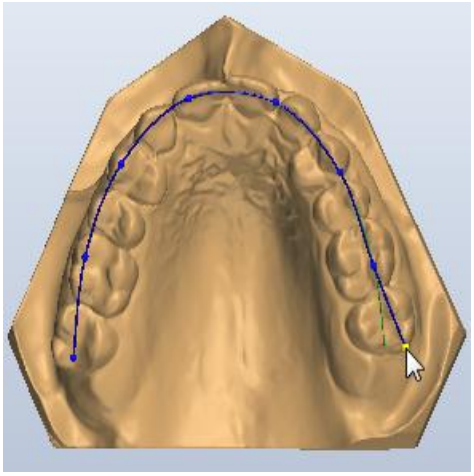
The **Maxillary arch** and **Mandibular arch** tabs offer the following options (the same for the upper and the lower arches). Define an ideal arch based on different default shapes. There are four types of ideal curve shapes available in the system:

Ellipse	Custom
	

Compare the existing shape of the teeth row with an ideal curve and consider the necessary modifications to the existing shape.



*Placing control points for the **Custom** arch*



*Editing the **Custom** arch*

Select the arch shape and place several control points on the model to set up the ideal curve: two points for Ellipse and Parabola (the third point will appear automatically creating an arch) and four points for Bezier and Custom as shown on the image.

To change the shape of the spline, change the position of the selected control points with the help of the cursor. For the custom made ideal curve, the original spline is marked green, whereas the current spline turns blue, for comparison as shown on the image.
Click ***Clear*** to remove the arch. Click ***Copy opposite arch*** to get a copy of the arch from the opposite cast. Select the **Show opposite arch** checkbox to show/hide the arch on the opposite cast.

Hint: Using the 1:1 real scaling of the Visualization Toolbar, you can easily replicate a physical arch wire by drawing it on screen with the Custom Arch option.

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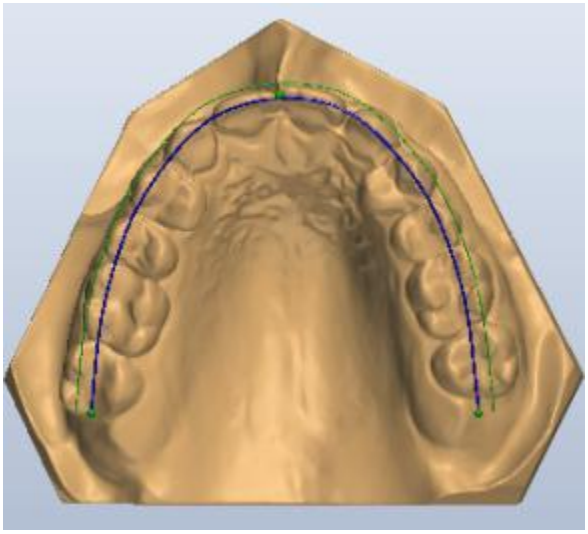

If necessary, define the distance between the ideal curve and the bracket in the **Bracket offset** box. The Bracket offset value corresponds to the thickness of the orthodontic appliance (e.g. the brackets), whereas the **Offset wire arc length** corresponds to the length of its metal wire. Entering both positive and negative values is possible in **Bracket Offset**.

Compare the **Ideal arc length** (blue) and the **Offset wire arc length** (green) values, to define the treatment measurements, if any. If the offset value equals zero, then the lengths coincide. In the example above, the original length of the upper tooth row spline is 103.89mm, whereas the offset value of 2mm changes the offset length to 109.63mm.

Click ***OK*** to finish Dental arc analysis.

4.3.2 Analysis Reports

The option **Analysis reports** is provided to enable effective and versatile analysis of the models. OrthoAnalyzer provides three officially recognized analyses: **Tooth width analysis**, **Bolton analysis** and **Space analysis**. The option of comparing both, the maxillary and mandibular teeth rows with the pre-set, standard values is enabled with the data imported into the Ortho Control Panel.

Click the ***Analysis reports*** button in the **Analysis** tab to open a window containing the **Overview** section illustrating the information presented in the three dental analysis tabs. In the **Overview** window, the teeth of the maxillary and mandibular right quadrants are marked red, the teeth of the maxillary and mandibular left quadrants are marked green and the missing teeth are marked grey.

Step 1: Customize the Tooth width analysis settings

The **Tooth width analysis** tab appears in focus automatically when you open the **Analysis reports**, it contains the data for this type of analysis as shown on the image below. To view a different type of the standard tables, select it from the **Standard tables** drop-down menu.

The **Tooth width analysis** tab presents a list of the actual individual tooth widths compared to the standard average values in order to determine the locations and amounts of the tooth-width discrepancies. New standard tables may be imported into the **Material settings** of the Ortho Control Panel.

SD = Actual TW - Average TW

**TW – tooth width*

Comparing the actual and the average tooth width values, the user can calculate the standard deviation between them (marked SD on the graphs).

Tooth width analysis

Step 2: Fill in the Bolton analysis tab

Click the **Bolton analysis** tab to view the table data available for this type of analysis.

The red spline in the **Overview** window is divided in three sections. It highlights the six front teeth and the twelve teeth closest to the labial surface on each of the models for the anterior and the overall Bolton analyses correspondingly (see the image below).

The tables automatically shown in this tab are reproduced by default. Specific to the patient model of an individual, the **Anterior** and **Overall** ideal ratios are customized and easily imported into the Ortho Control Panel.

According to the example in the tables, the ideal AR for the ethnic group to which the patient belongs to equals 0.77 whereas, its ideal OR equals 0.91.

Based on the ratios of the maxillary and mandibular six and twelve widths of the current model, the system calculates the **AR** and **OR** deviations from the standard ratios for the given ethnic group. It is possible to predict the necessary measures to adjust the structure of the whole teeth row in order to provide the orthodontic treatment.

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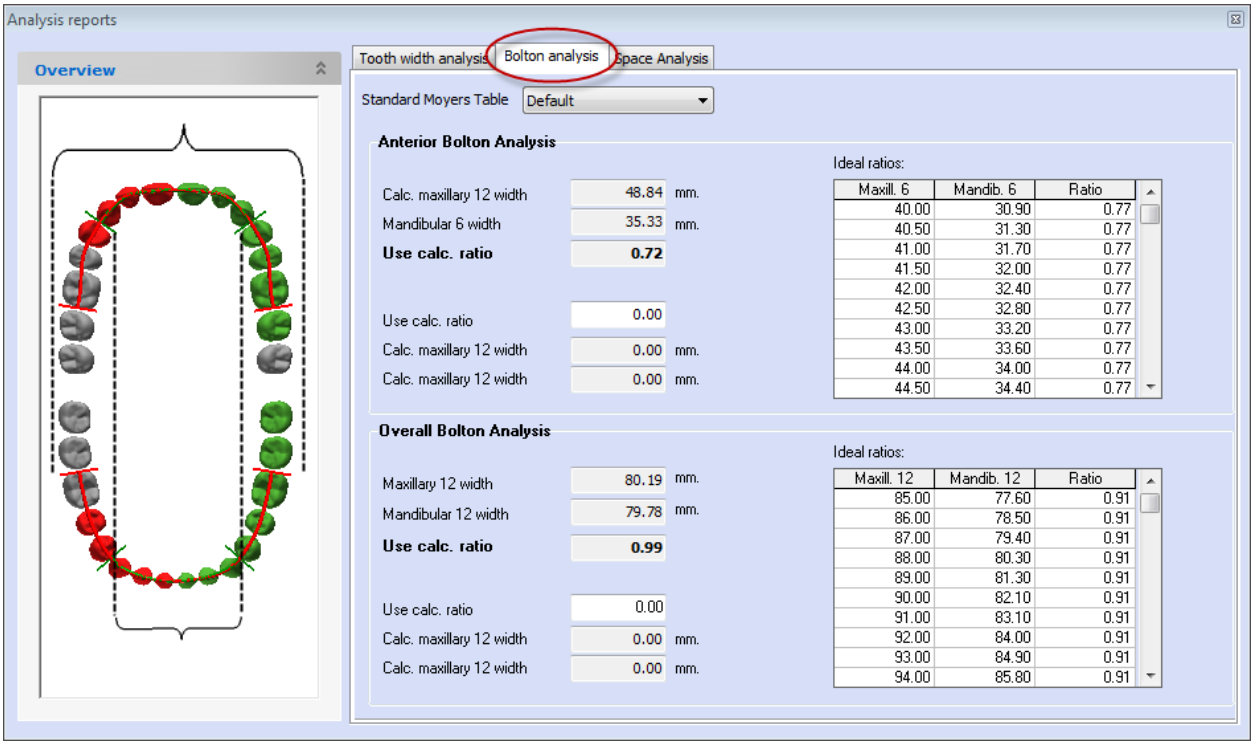


Bolton analysis

1. *Overall analysis (twelve width)*
2. *Anterior analysis (six width)*

Step 3: Apply the settings for the Space Analysis tab

Click the **Space analysis** tab to view the table data available for this type of analysis.

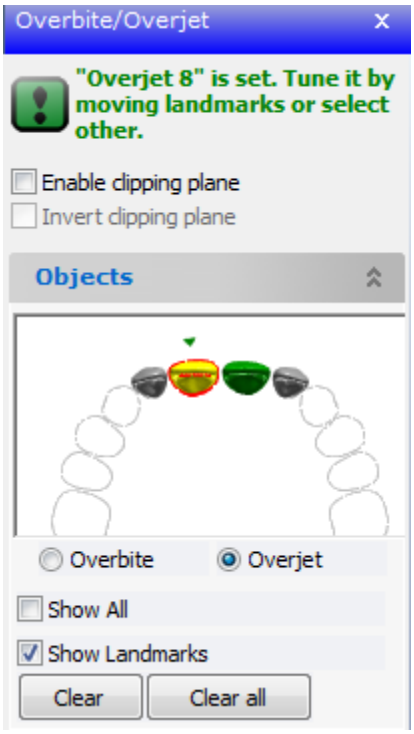
This section provides two types of space analysis – the **Moyers** and the **Tanaka & Johnston** table analyses for both the maxillary and the mandibular arches. This is done to predict the orthodontic manipulations with the spaces indicated in the setup section of the analysis process.

The **Standard Moyers table** is selected by default. To switch to a different type of the standard Moyers table, select it from the **Standard Moyers Table** drop-down list. This is customizable in Ortho Control Panel.

Having calculated the sums of the incisors, canines and premolars separately, the system yields a set of Moyers and Tanka & Johnston values for the **Total space required**.

Space analysis

4.3.3 Overbite/Overjet



The **Overbite/Overjet** function allows you to measure the overbite and overjet distances. Please follow the hints in the form to perform the measurements.

The **Objects** window in the form contains an overview of the teeth to be measured. Click on the teeth in the **Objects** window to select them for operation. The **Overbite** function is available only for the central incisors and is not active for the lateral incisors (see the image).

The selected tooth is circled in red. The teeth that have already been measured become green.

Place the landmarks on the necessary teeth in the session window or in the 2D cross section (see images below). You can always move the landmarks by dragging them with the cursor.

Enable clipping plane – When selected, cuts away the portion of the model (see images below).

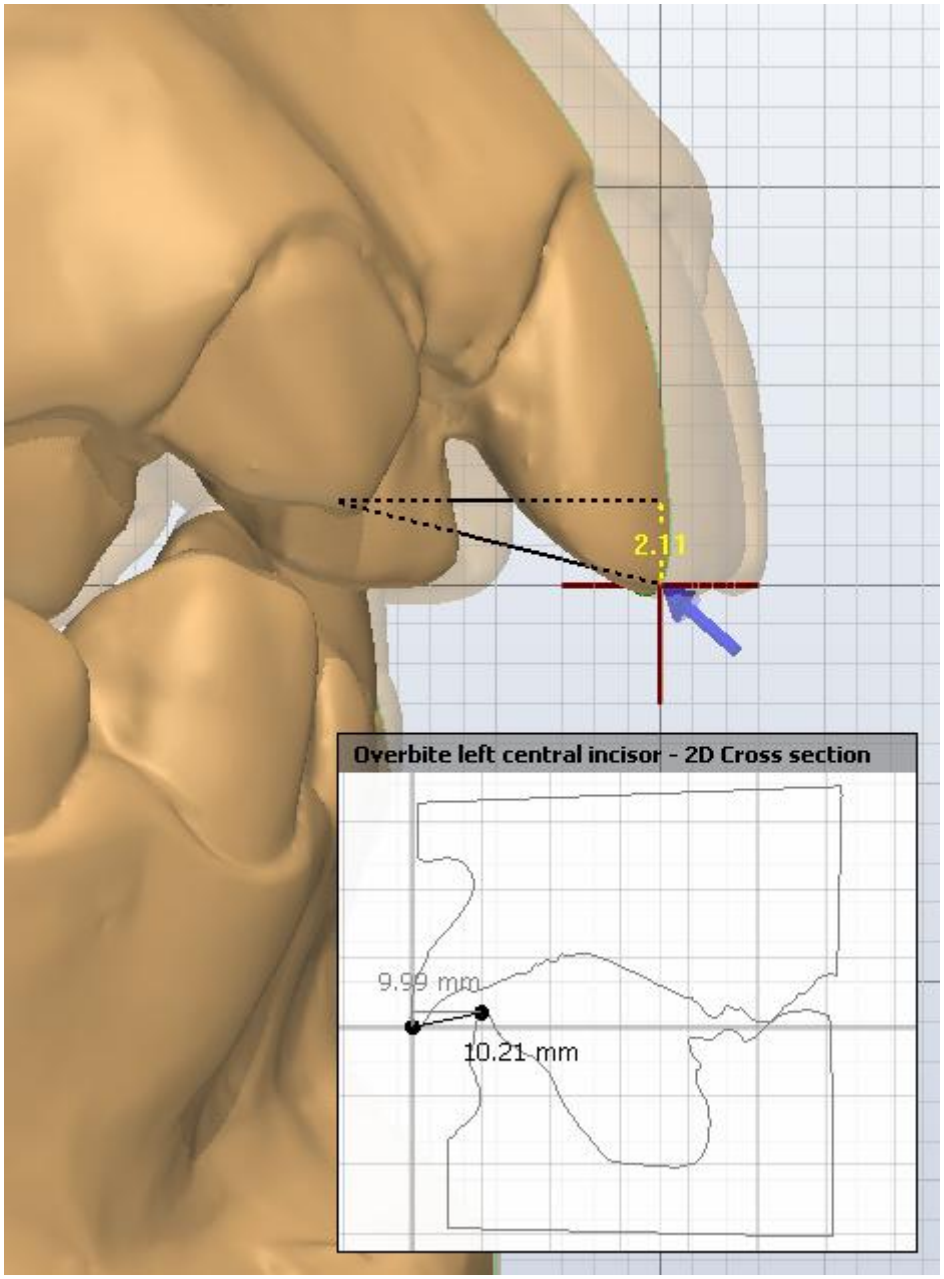
Invert clipping plane – When selected, cuts away the

opposite portion of the model.

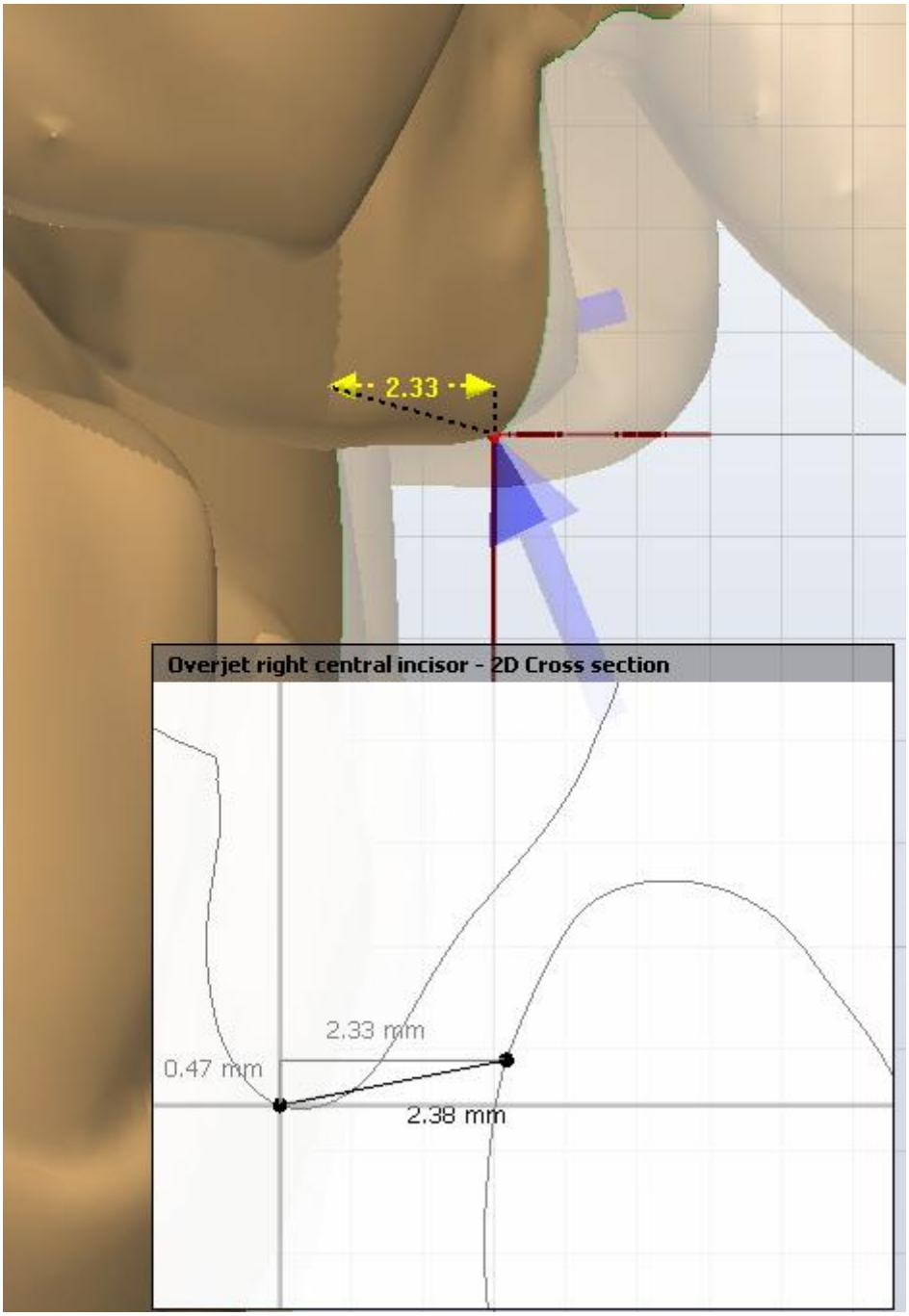
Select **Show all** to view all the overbite/overjet measurements on the model.

Select **Show landmarks** to show/hide the landmarks on the model.

Click ***Clear*** to remove the measurements from the selected tooth. Click ***Clear all*** to delete all the measurements on the model.



Overbite measurements



Overjet measurements

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4.3.4 Questionnaires

For a better presentation of the customized analysis and the implementation of scoring systems, you can now use the questionnaire located under **Analysis**->**Questionnaires**.

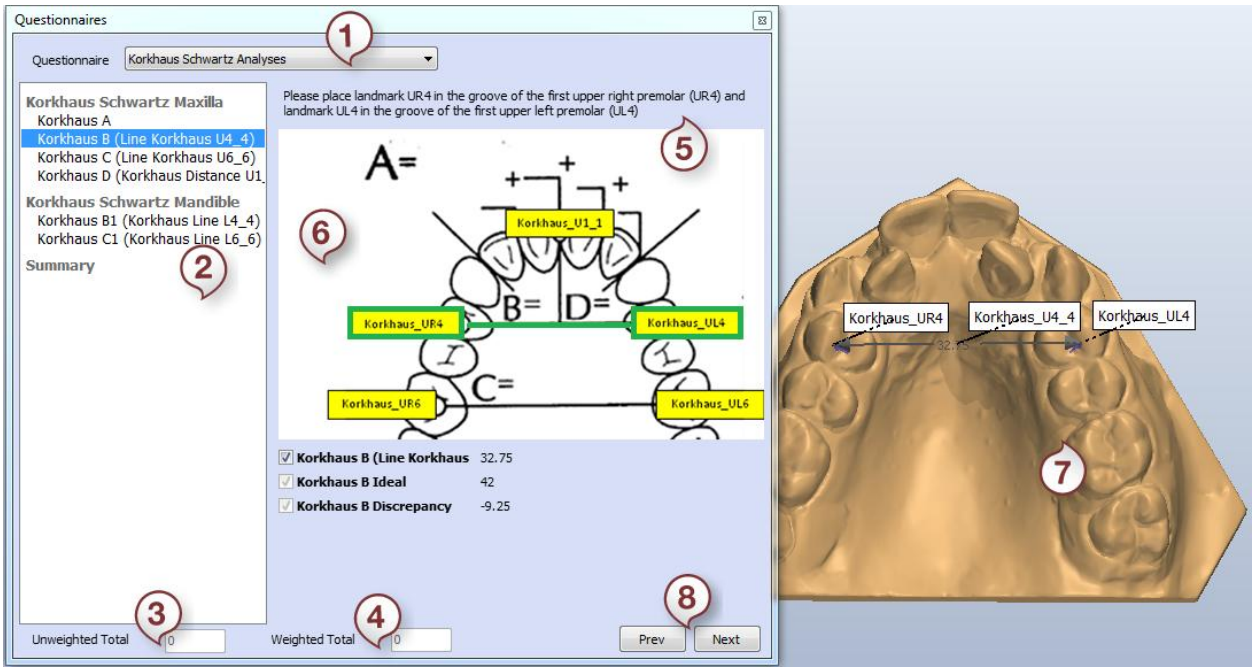
This new feature allows you to present your customized analyses in a more user-friendly manner using bitmaps, notes, screenshots etc.

4.3.4.1 Using a Questionnaire

To start the analysis, select the ***Questionnaires*** button in the Analysis section of the Function panel. It will open the *Questionnaires* window.

This section presents an example of the PAR Scoring questionnaire, though any analysis or scoring system can be configured with the existing tools.

Note: Prior to working with a questionnaire in Ortho Analyzer™ you have to configure it in the Ortho Control Panel. Please refer to the Ortho Control Panel manual (section *Questionnaires*) for the details.



1. *Available Questionnaires*
2. *List of steps*
3. *Unweighted Total of scores*
4. *Weighted Total of scores*
5. *Content of the question*
6. *The illustrating image*
7. *The model with the measurements*
8. *The Previous/Next buttons*

1. The **Questionnaire** drop down menu presents the list of Questionnaires available for filling. To choose the one you need, press the arrow to the right and select the appropriate test from the drop down menu.
To load another questionnaire to this list go to the Ortho Control Panel.

2. The **List of steps** presents the sequence of groups and steps that you created in the Control Panel. Selection of each group or step with the a single click opens its content to the right.

3. The **Unweighted Total** indicates the unweighted amount of scores (total scoring value of the questions).

4. The **Weighted Total** shows the weighted total of scores.

5. The **Content of a step** contains the question and other components that you have set in the Control panel.

6. The **illustrating image** functions as a hint, describing what measurements should be performed on the model on this step.

8. The **Previous/Next buttons** allow you to move up or down the list of groups and steps.

After selecting the first question out of the group with a single click. Click the ***Define*** button and measure the appropriate segment on the model.

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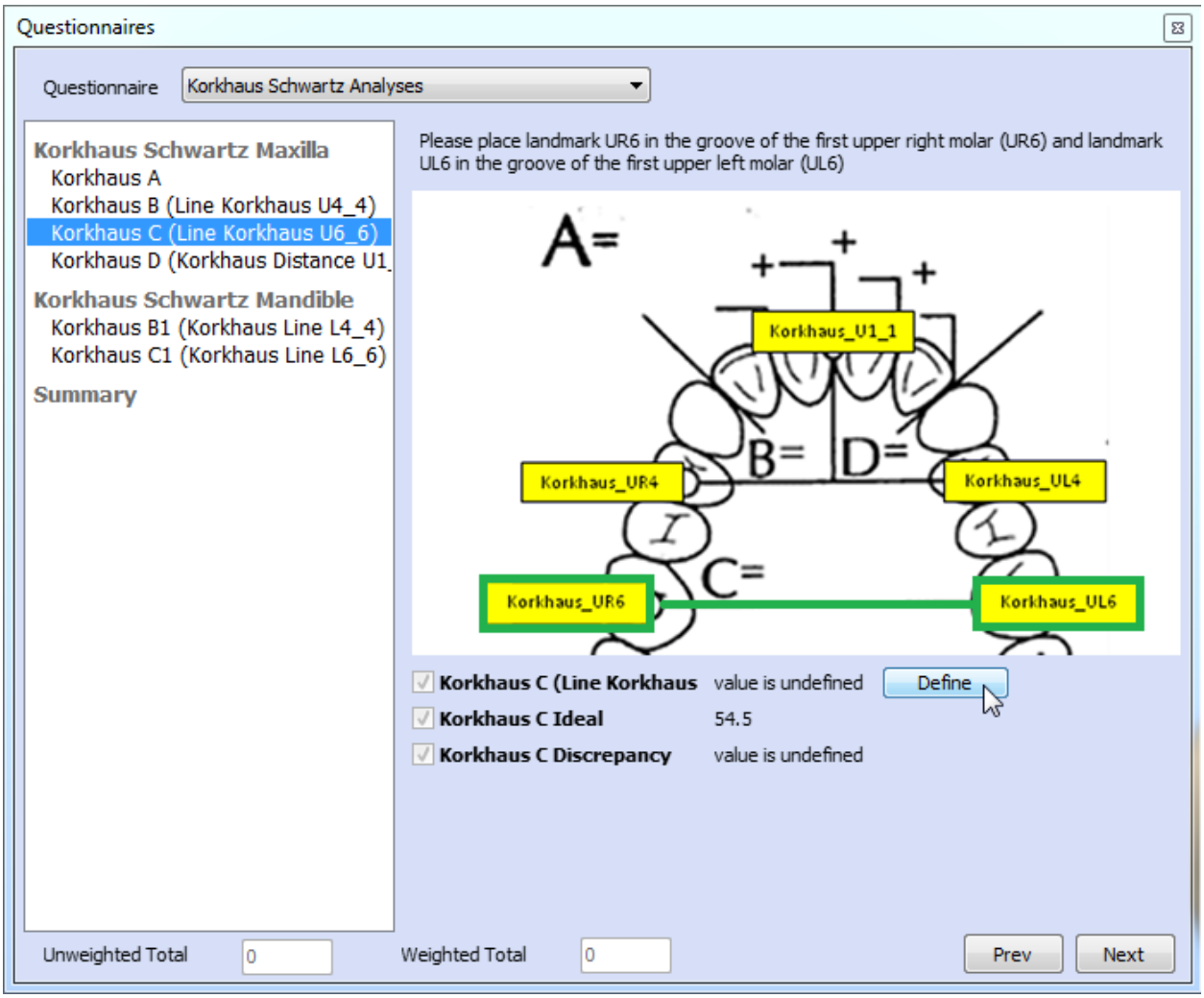
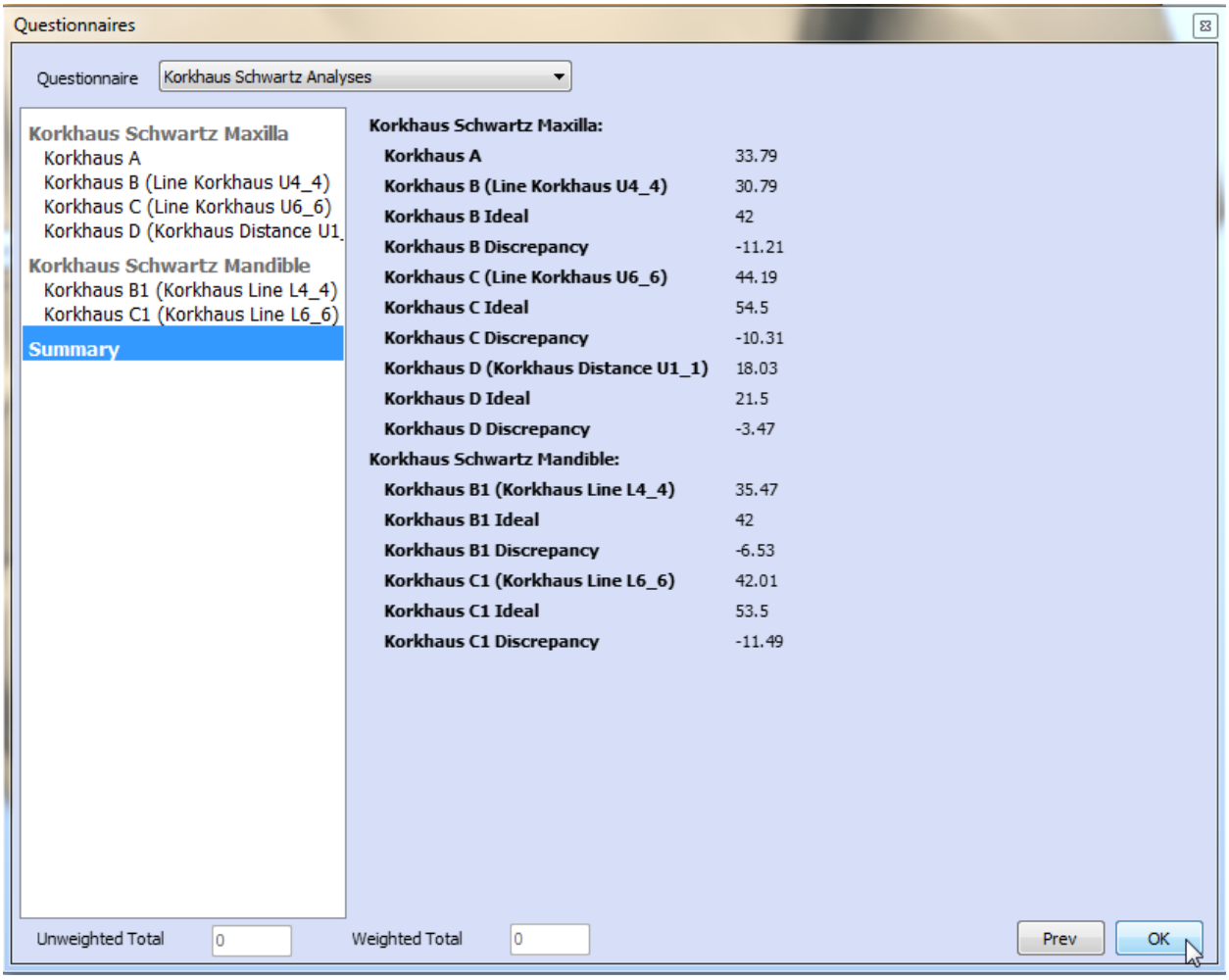


It is possible to customize or redefine your measurement by right-clicking it:

The **Additional information** section allows you to make notes on the current step.

After you have finished working with the step, press the ***Next*** button at the bottom of the window. To come back to the previous question, click at the ***Prev*** button.

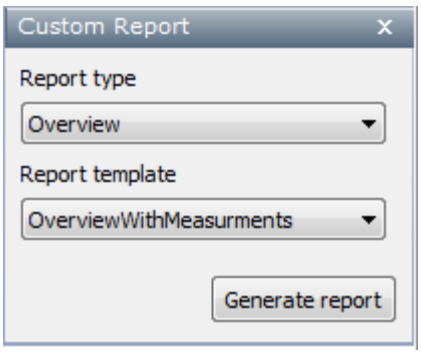
At the end of the scoring process you can view the Summary:



Click ***OK*** to end the test.

4.3.5 Generate Report

The **Generate report** function organizes the data contained in both, the **Configuration** and **Analysis** sections into a separate printable document.



1. Click the ***Generate report*** button on the Analysis tab.
2. In the appeared *Custom Report* dialog box, select the **Report type** you wish to make. The report type depends on the information you need to include in the report. Report types and their structures can be defined in the Ortho Control Panel: *Feature Settings->Custom Report Configuration.*

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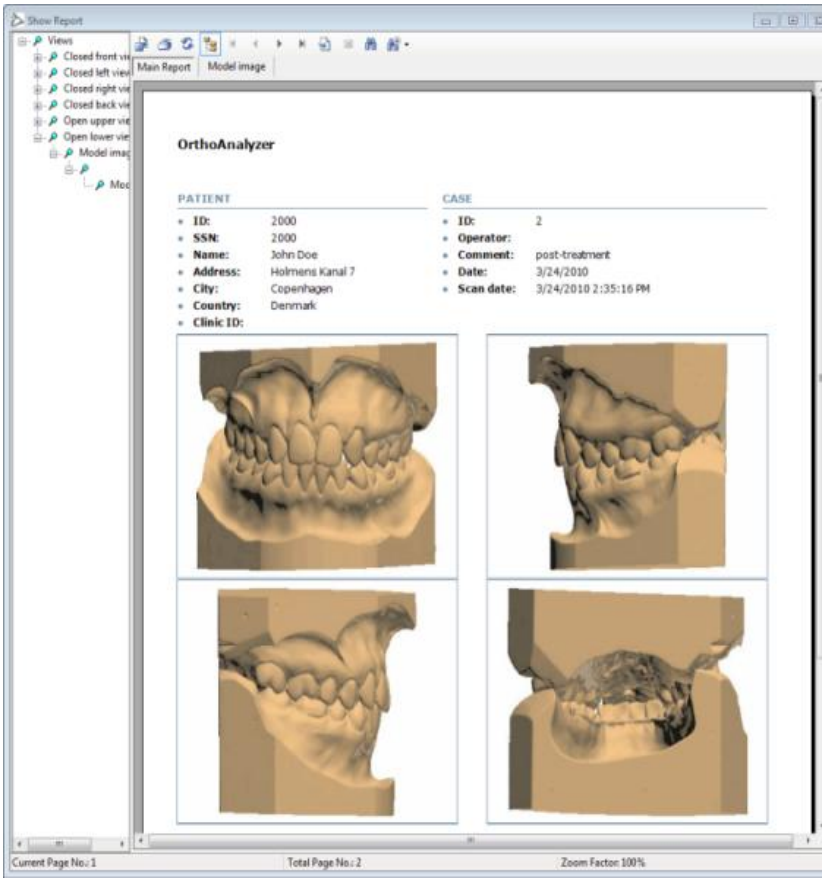
3. Select the desired **Report template**.
4. Click ***Generate report*** to load it in a separate window.
5. You can explore the report using various visualization tools in the top toolbar.
6. The report can be **Exported** to a folder in .rtp format and print it out, if needed.

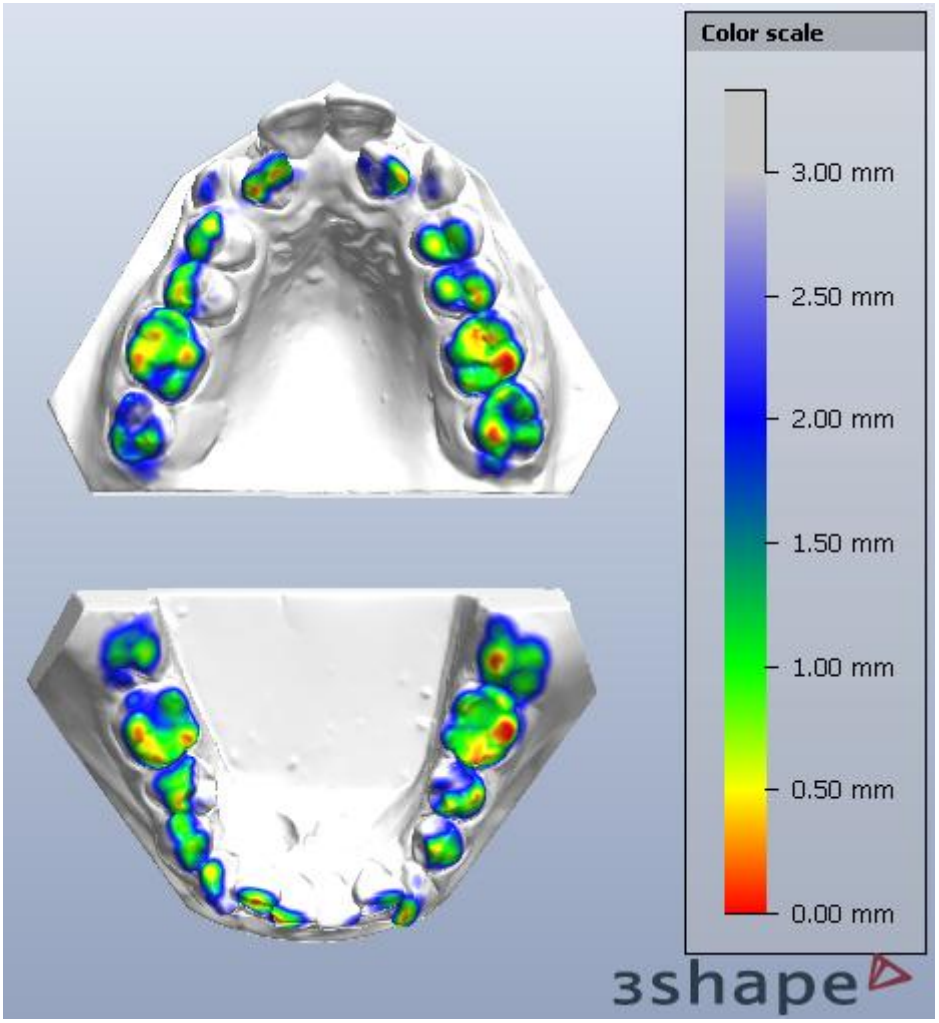


	Export report
	Print report
	Refresh
	Toggle group tree
	Navigate around the pages
	Go to a specific page
	Close current view
	Search for text
	Zoom

Toggle group tree: the displayed Analysis report consists of the two main parts – **Views** (**Configuration** section in OrthoAnalyzer) and **Analysis** (**Analysis** section). The rest of the group tree structure specifies the multiple parts of the sections covered here (model images).

Close current view: active when displaying a model image; does not apply to the Main Report.

4.3.6 Occlusion Map



The **Occlusion map** enables visualization of occlusal distances in the model set. Click the

Occlusion map button on the **Analysis** tab. The system will automatically color the virtual casts according to the **Color scale** displayed on the right of the session window.

The areas of the teeth closest to the occlusion surface are marked red, gradually changing to the colder color palette, as the occlusion distance becomes larger.

4.4 Model Set Comparison

The **Model Set Compare** section of the Function panel enables detailed simultaneous analysis of the two model sets belonging to one patient.

This section includes:

- **Compare model sets**
- **Maxillary model registration**
- **Mandibular model registration**
- **Difference map for two model sets**.

These steps are described in details below.

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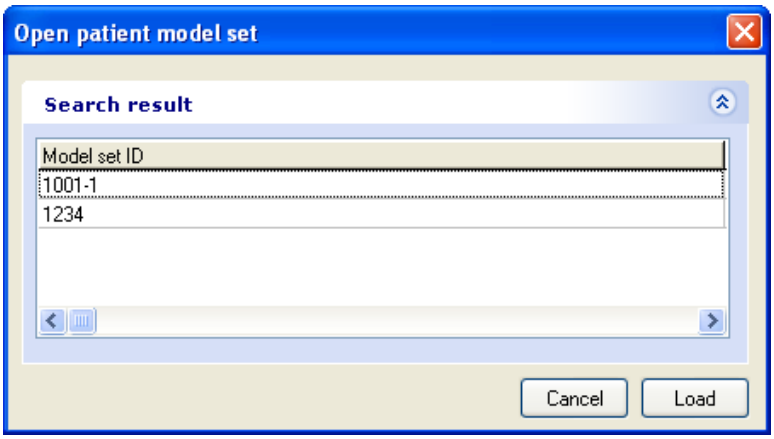
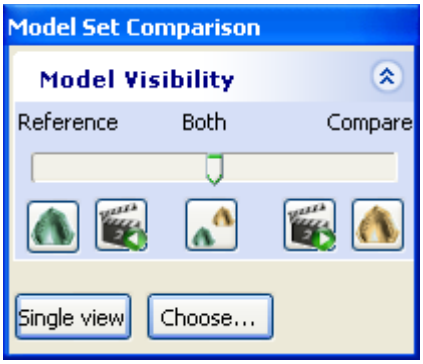
4.4.1 Compare Model Sets



To activate this option, click the ***Compare model sets*** button in the Main toolbar while one of the patient models is already loaded.

This will open the Open patient model set window with the model sets listed in the search results for the chosen patient. Select the model set you wish to compare the already loaded one to and click the ***Load*** button.

This loads the second model set. The two model sets are displayed in the same position but with different colors.

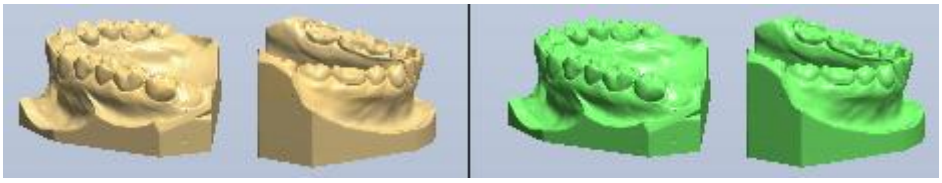


The visibility of the models can be operated from the appeared *Model Set Comparison* window.

The reference model is shown in green and the compare model has yellow color.
The model visibility (color) can be gradually changed with the slider or toggled with the ***Show reference model set only*** and ***Show compare model set only*** buttons.

The ***Show both model sets*** button returns the slider to the middle position.

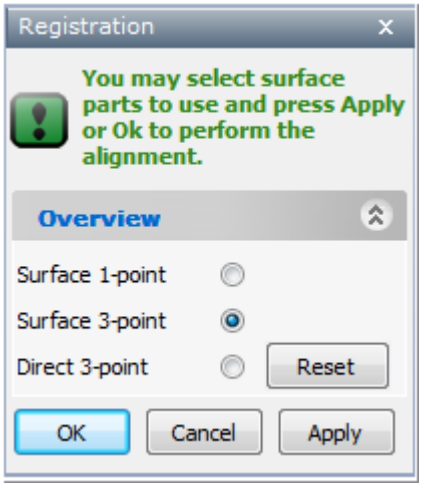
The ***Animate to reference model sets*** and ***Animate to compare model sets*** buttons slowly move the sliding bar from one end to the other in the corresponding animation.



When clicked, the Single view button changes to the Dual view one and displays two model sets next to each other. The Choose button opens Open patient model set window to load another model to compare with if needed.

4.1.2 Maxillary Model Registration

The aim of the **Maxillary model registration** step is to properly align the upper models of the model sets chosen for comparison. This is a necessary pre-requisite for effective and informative analysis of differences between the model sets.



Step 1: Start the maxillary model registration process

Click the ***Maxillary model registration*** button in the **Model Set Compare** tab.

Choose the best option for the model alignment in the appeared **Registration** form:

- **Surface 1-point:** Indicate single corresponding points on each model for alignment and optionally select the surface to align with the help of the **Selection Tools**.
- **Surface 3-point:** Indicate three corresponding points on each model for alignment and optionally select the surface to align using the **Selection Tools**.
- **Direct 3-point:** Indicate three corresponding points on each model for alignment. This method does not use the surface information.

Note: It is advisable to use the **Dual view** visualization in order to access both models at the same time. The selection of points can be done on the reference model first and then on the comparative model, or vice versa. Use the ***Reset*** button to delete the reference points if needed.

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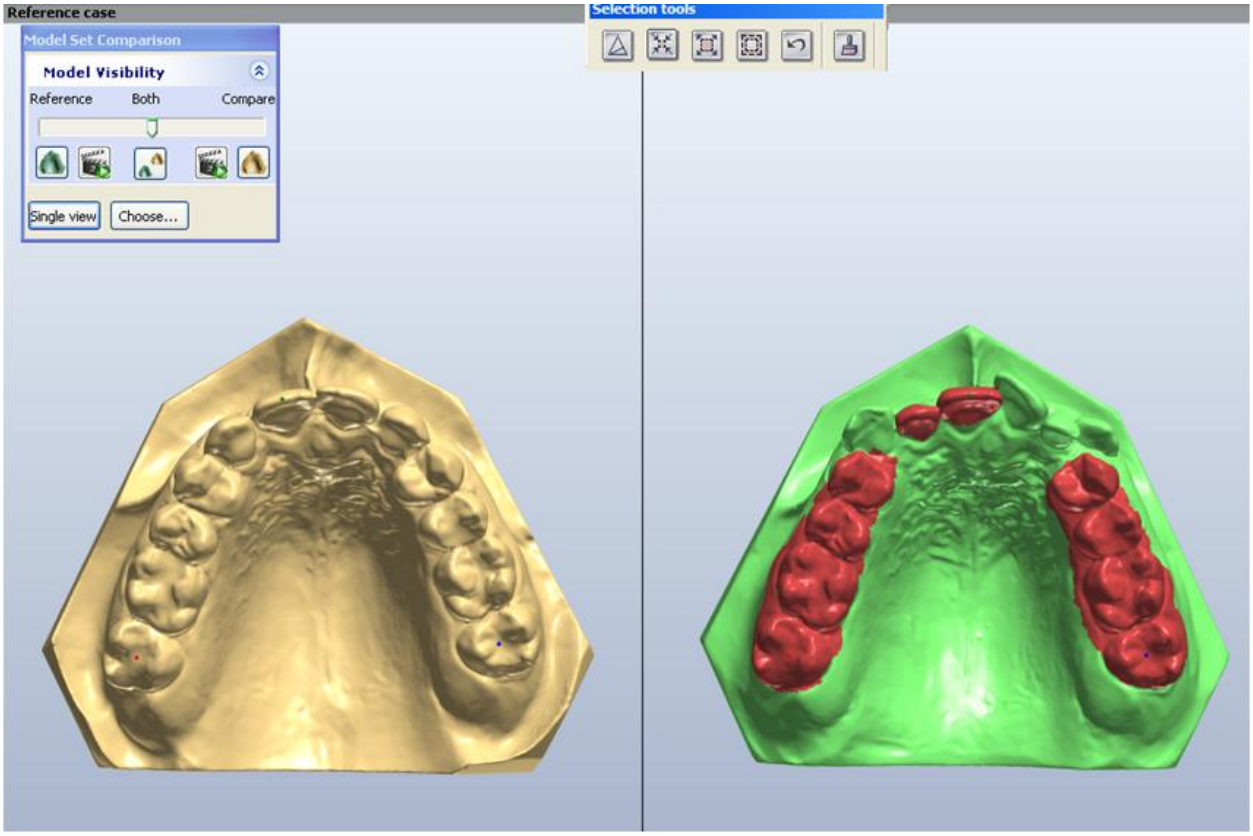


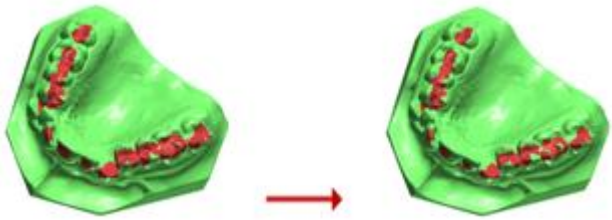
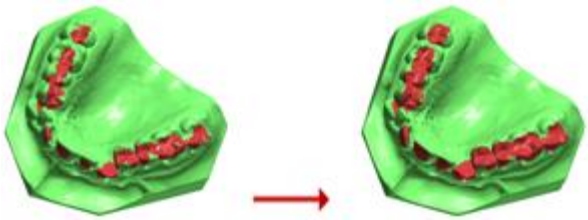
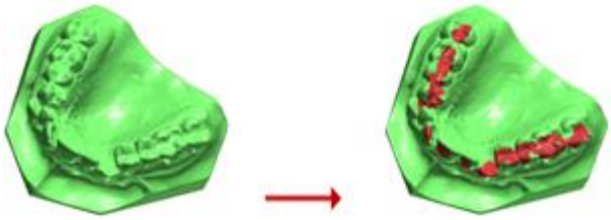
Step 2: Gain better alignment with the Selection tools
The additional surface information provided with the **Selection tools** improves the alignment process. When no surface correspondences are set, the system automatically uses the whole surfaces of the models as the reference surfaces.

These tools are only available in **Surface 1-point** and the **Surface 3-point** registration methods as the **Direct 3-point** method does not refer to surfaces.

The selection tools can be used in any order and combination.

The tools include the following:

Item	Action
	Unselect all – Unselects all selections.
	Reduce selection – Reduces the selected area by excluding the neighboring areas from the selection.

	
	Extend selection – Extends the selected area by adding the neighboring areas to the current selection. 
	Invert selection – Unselects the selected and selects unselected areas of the surface.
	Undo last selection – Makes one step back in the selection operation.
	Paint selection – Use the brush tool to "paint" the model reference surface while keeping the left mouse button pressed. 
Result	

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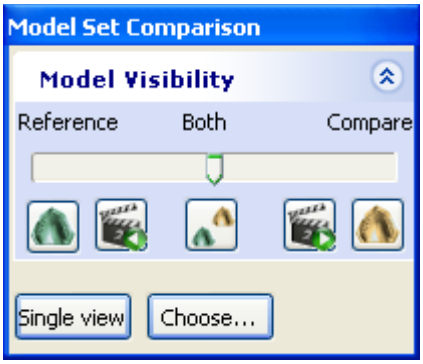


To see the effects produced by the selections of the upper model registration, keep pressing ***Apply*** and transfer to the **Single view**.

The *Model Set Compare* form (image to the left) is described in the Compare Model Sets chapter.

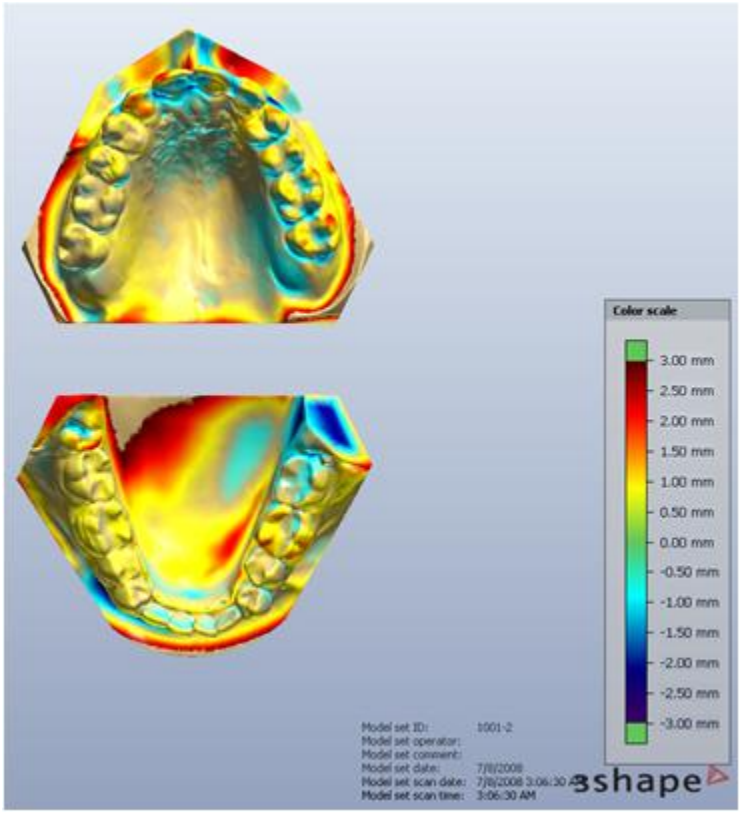
On completion of the upper model registration, click ***OK*** to save the results and leave the step.

4.1.3 Mandibular Model Registration

This step assists the proper alignment of the lower models belonging to the model sets chosen for comparison. This is a necessary pre-requisite for effective and informative analysis of the differences between the model sets.

Click the ***Mandibular model registration*** button in the **Model Set Compare** tab to open the **Registration** form. The rest of the registration process is similar to the one described in Maxillary Model Registration chapter.

4.1.4 Difference Map for Two Model Sets



The **Difference map for two model sets** compares shape differences between the reference and the examined model sets visualized with the help of the color scale. The distance between the surfaces of the two model sets is measured yielding positive and negative deviation values.

Click the ***Difference map for two model sets*** button in the **Model Set Compare** tab. The system will automatically mark the virtual casts according to the Color scale displayed on the right of the session window

The areas of the model set rising above the reference model are marked red gradually transiting to green, as the distance between the models gets smaller, and then

continues to the colder color palette, when the surfaces of the compared model sets start to intersect.

5 Saving and Exporting

5.1 Save Session

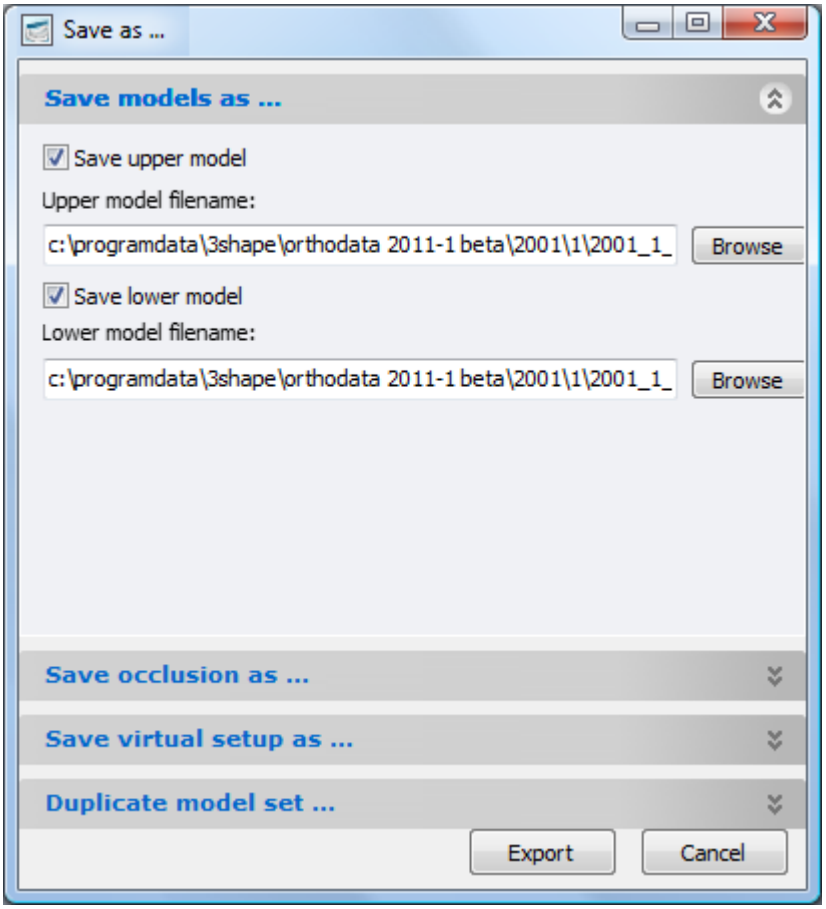
While working with on a model set, you can always save you current session by pressing the ***Save session*** function button and save the current feature tree in .3ml format in the default "OrthoData" folder.

5.2 Save Models as...

With the ***Save models as...*** button you can save your upper/lower models to the specified folders with the chosen names.

Save virtual setup as... section saves the simulation you have made for the orthodontic treatment.

Save occlusion as... section saves the name of the new occlusion.



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6 Creating Virtual Base

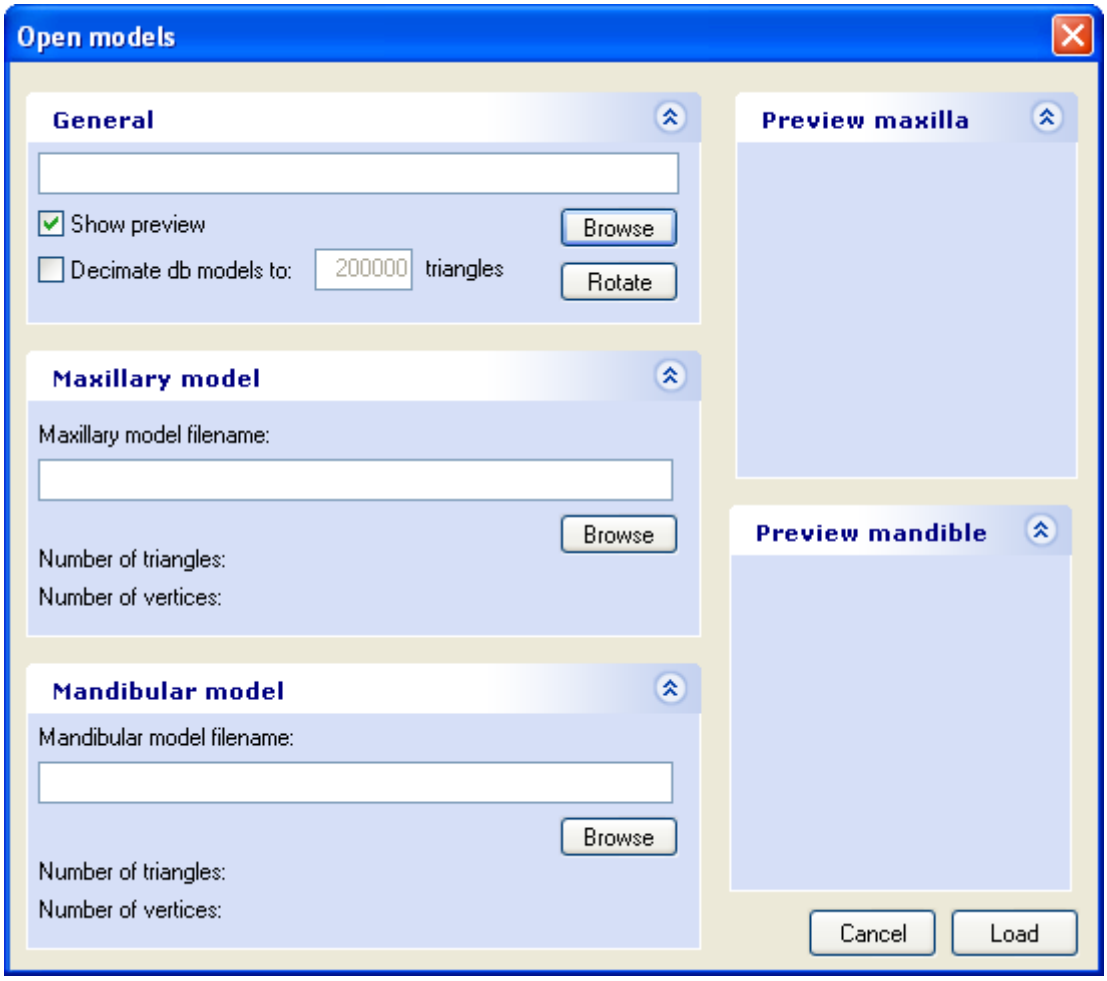
Creating the virtual base involves a modeling session to align maxillary and mandibular models. The first step depends on a chosen **Create Virtual Base** or **Open Patient Model Set in Virtual Base** modeling mode. The first option opens any baseless model set for modeling, whereas, in the second one opens the baseless model set within the patient database.

6.1 Create Virtual Base

This functionality creates virtual base for a model or a model set not necessarily belonging to the patient database.
The task is executed in three steps: **Open models, Virtual base** and **Export models as**.

- **Open Models**

Click the ***Create Virtual Base*** button to automatically go to the *Open models* window and load the required models with the ***Load*** button.



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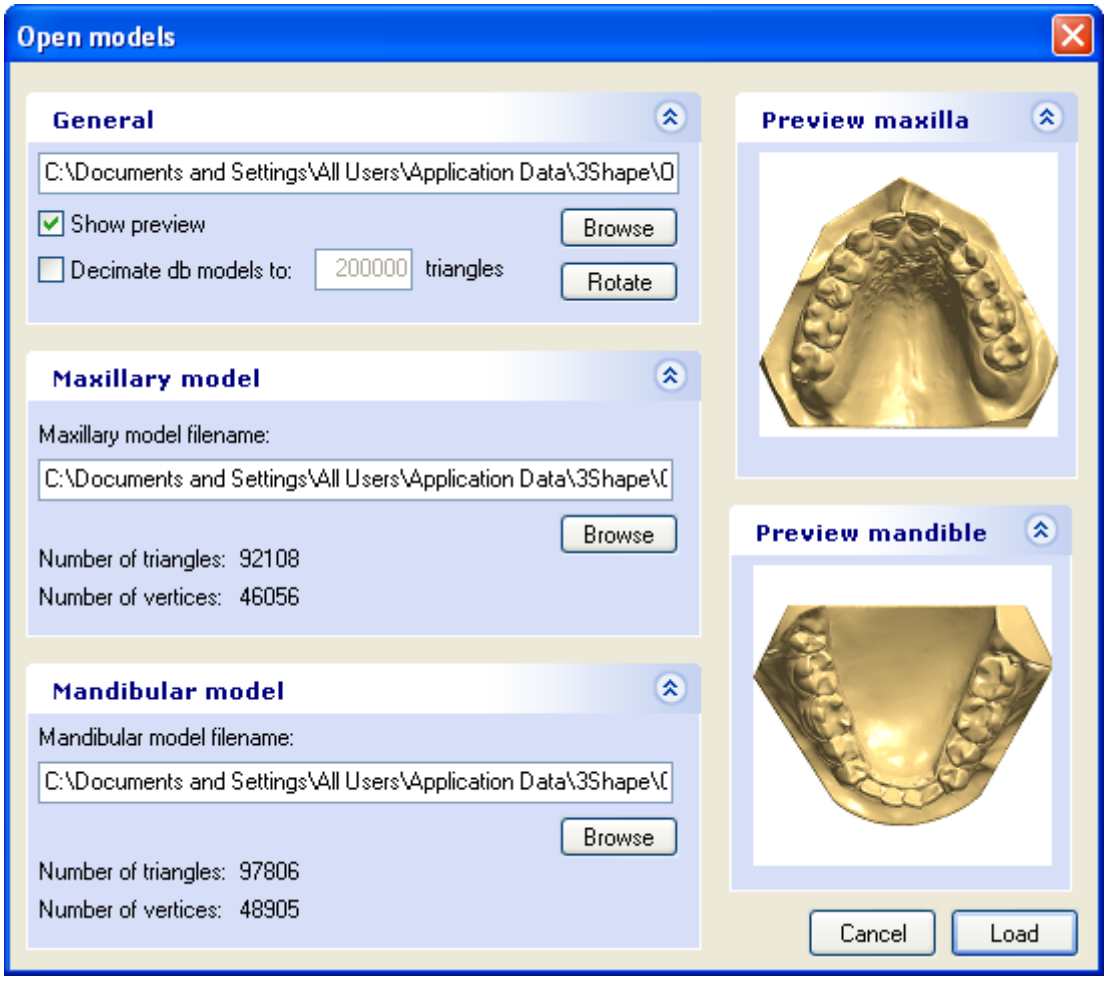
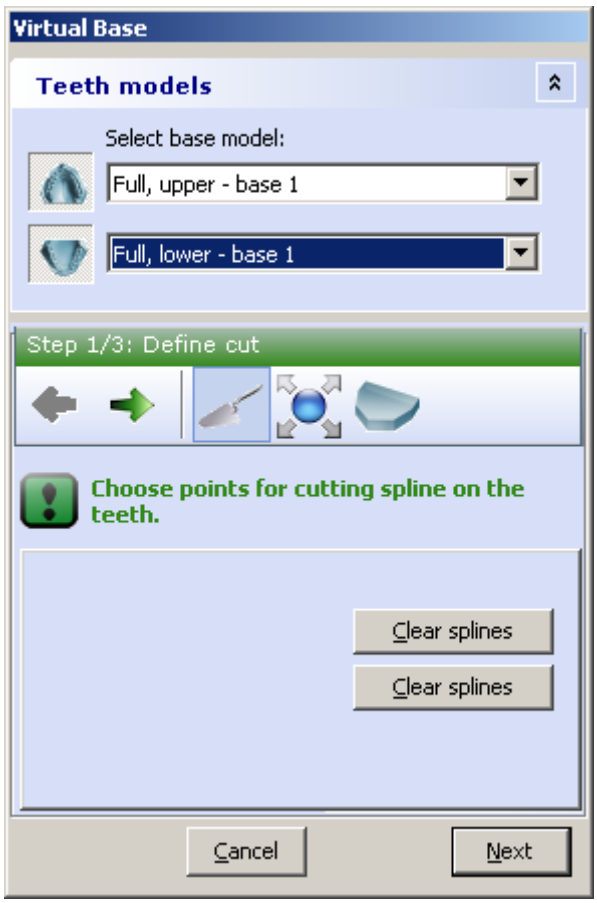


- **Virtual Base**



The software automatically opens the *Virtual base* dialog guiding you through the main steps: **Define Cut**, **Fit Base** and **Create Base**.

Upper/Lower base icons toggle the visualization of the corresponding models for better overview.

Previous /Next operations navigation buttons.

Define cut – used to draw the cut or.

Fit base – adjusts the base.

Create base - creates a new base.

Base model type

Select the desired base model type from the drop-down menus. (The virtual models are set up in the *Feature Settings->Template base models* of the Ortho Control Panel)

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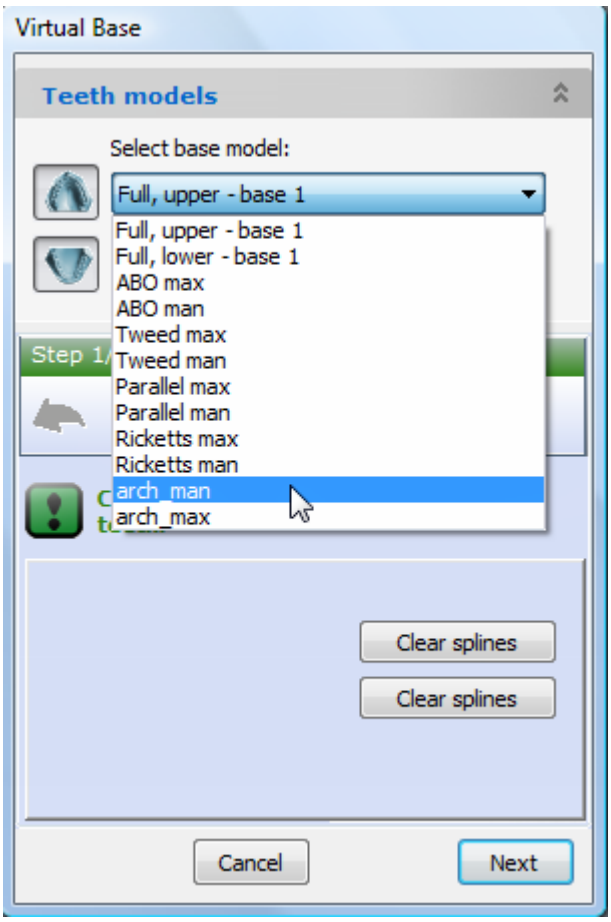
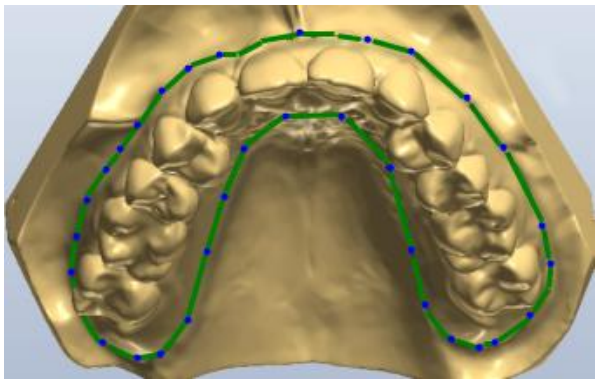


Hint: To create the smallest virtual bases, select the provided Arch base model out of the base models list. You can also import your own base models.

Please refer to the Ortho Control Panel manual (chapter *Construction Elements*) to learn how to add these models to the list.

Select the **arch_man/arch_max** base models from the drop down menu in the Select base model section.

- **Define cut**

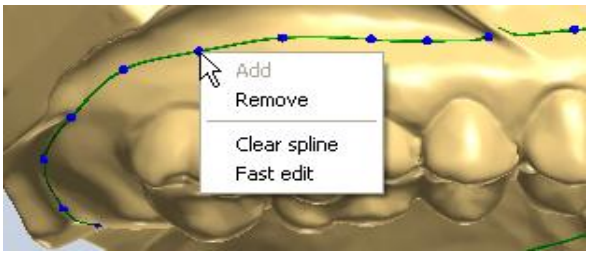


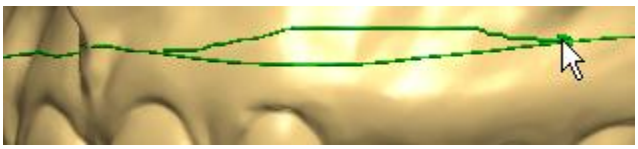
Decide on the part of the model you wish to leave, click the ***Define cut*** button if not already at this step and place the spline points over the model curve to define the cut. Click the first point of the spline to close it.

Where needed, adjust the spline manually by dragging the points with the cursor to the required position.

Incorrect splines can be removed by clicking the corresponding ***Clear splines*** buttons in the *Virtual base* dialog.

From the right-click menu options of the cursor positioned over the cutting spline you can **Add** new or **Remove** indicated spline points, **Clear spline** or use **Fast edit** function to correct the spline





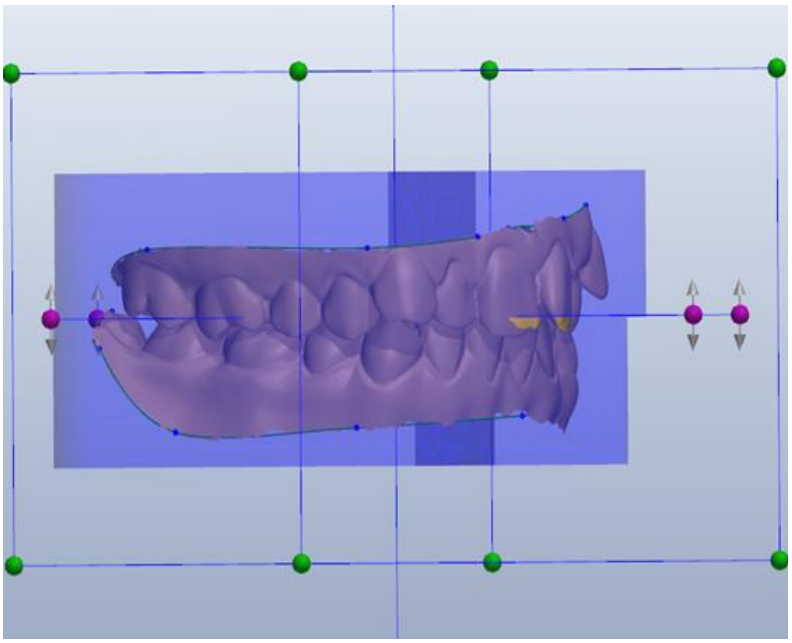
For **Fast edit**, left-click on the spline and move the cursor while holding the mouse button down to draw a new part of the spline.

- **Fit base**

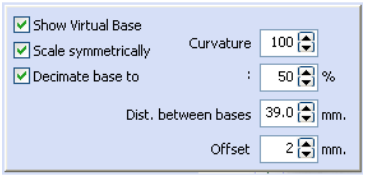
Once maxilla and mandible splines have been placed, click the ***Next*** or the ***Fit base*** buttons to go to the **Fit base** step.

You can adjust orientation of the base by dragging the violet points and the base size with the green points of the bounding box. Click and hold the mouse button to drag the bounding box to the required position.

The following parameters of the base can be modified:



Show Virtual Base – toggles visualization of the virtual base.



Scale Symmetrically – sets whether the bounding box is scaled symmetrically when dragging by the green points.

Decimate base to - specifies the decimation amount of the base triangles (see image below).

Curvature - sets the amount of curvedness for the base model along the sides (see image below).

Dist. between bases - Specifies the distance between the maxillary and the mandibular bases.

Offset - specifies the distance between the initial shapes of the base and the baseless model.

IMPORTANT: if the cutting spline is not contained in the blue base model at the **Fit Base** stage, the combined 3D model cannot be generated.

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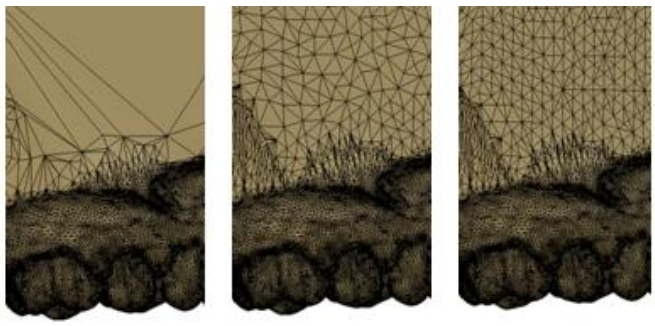
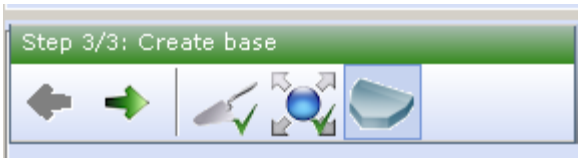
Decimation by 5%, 50% and 80% respectively.



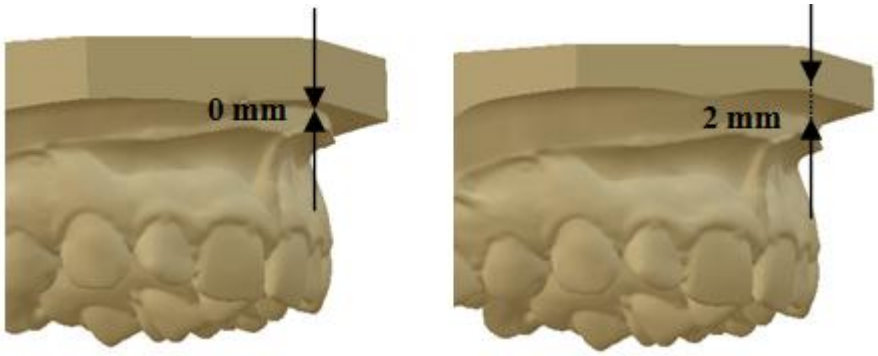
Curvature sets the amount of curvedness for the base model along the sides.

- **Create base**



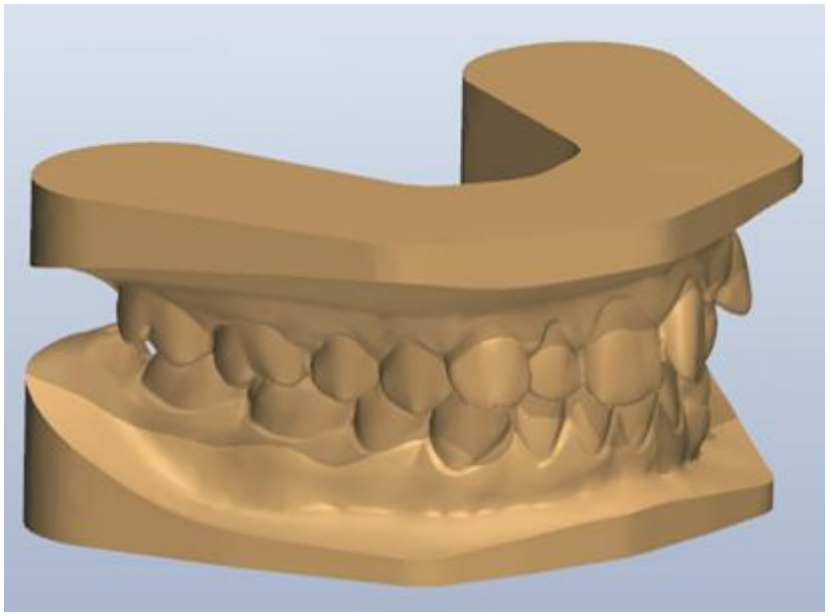
Once adjustments to the bounding box at the **Fit base** step are complete, click the ***Next*** or ***Create base*** button to create the virtual base.

Click ***OK*** to close the *Virtual base* dialog window. Your models now appear to have virtual bases.

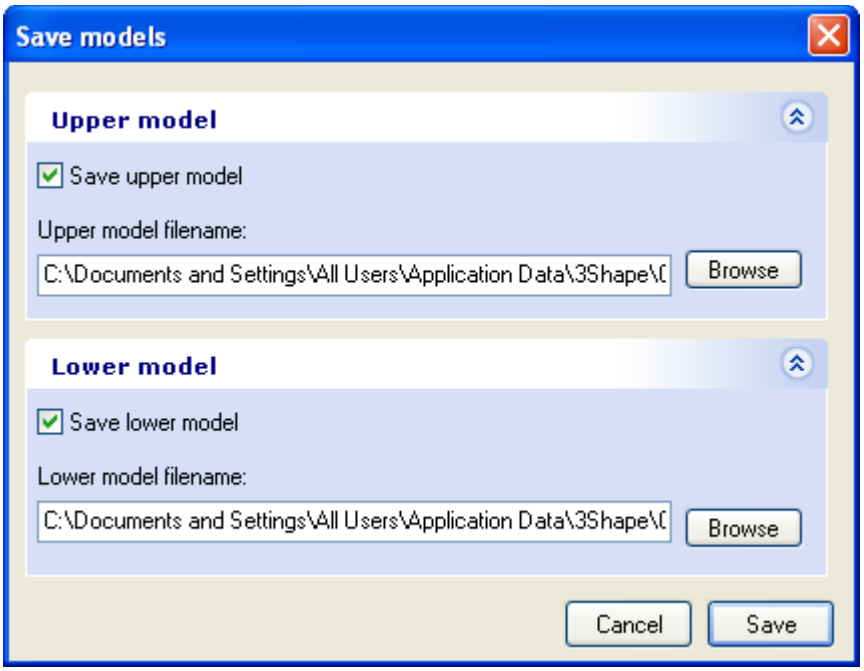


Base offset 0mm and 2mm respectively

The image below shows the virtual base using the included Arch Max and Arch Man bases STL models:



- **Export models as...**



Once creation of the virtual base is finished, it is necessary to save the models.

Click the ***Export models as...*** button and select the checkboxes to save either both or only Upper/Lower model in the appeared *Save models* dialog, browse to the desired location and click the ***Save*** button.

6.2 Open Patient Model Set in Virtual Base

The aim of the **Open Patient Model Set in Virtual Base** step is to model the virtual base for a model or a model set belonging to the patient database. The task involves completing of the three steps: **Open Models, Virtual Base** and **Export Models**, similarly

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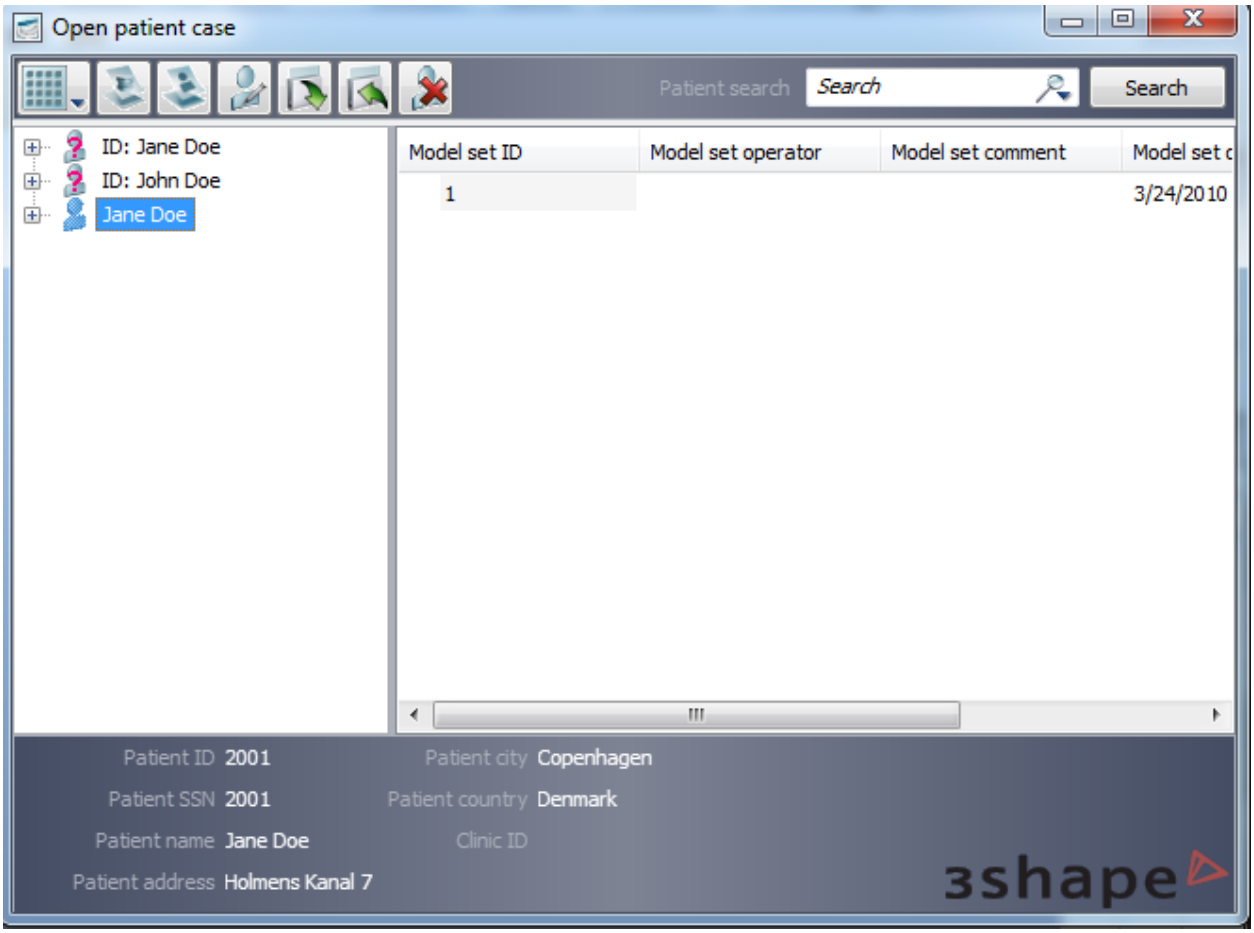
to the described in the **Create Virtual Base** chapter with the only difference being the automatic navigation to the *Open patient case* dialog where the user looks for a model set within the available patient cases.



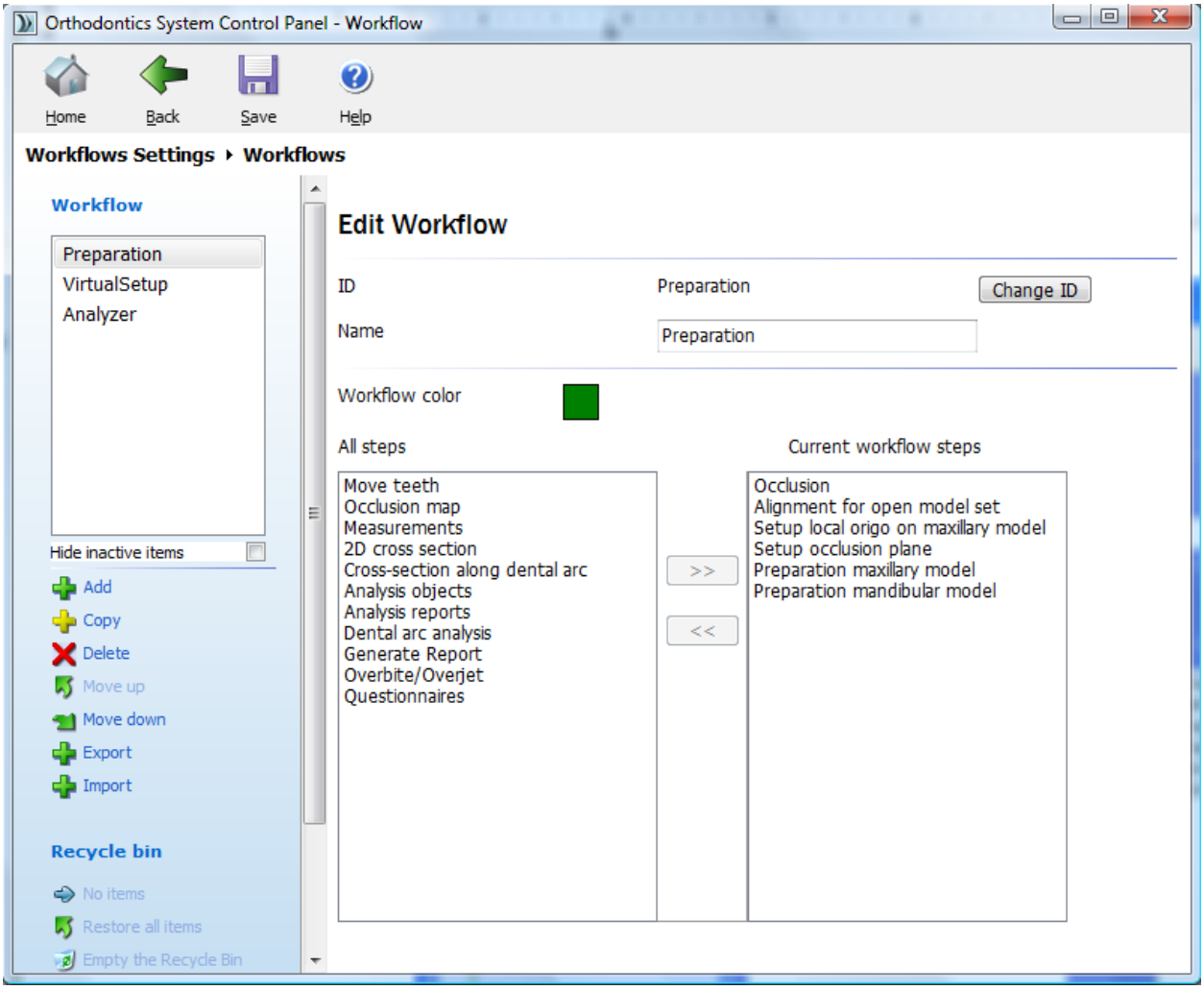
7 Customized Workflow Wizard

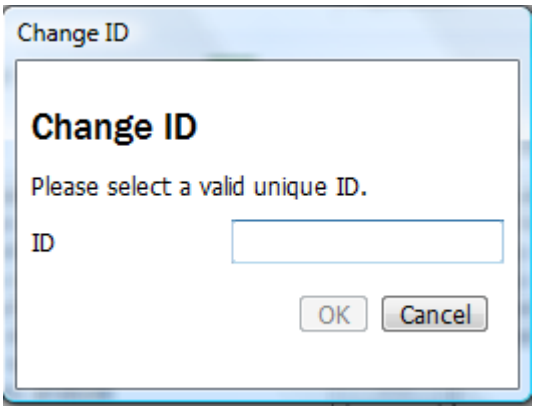
As a new feature in OrthoAnalyzer 2010, you can create a number of customized workflow wizards with predefined operational steps. This cleans up the software interface and organizes steps and operations for your own use. The supplied OrthoAnalyzer version installs 3 pre-made customized workflow wizards by default. As shown on the image, the wizards are represented by the hat icons of varying color and are located in the toolbar of the OrthoAnalyzer.

The supplied wizards are named as follows:

1. Preparation
2. VirtualSetup
3. Analyzer

The wizards are setup and edited in the Ortho Control Panel. You can use and edit the pre-made wizards or add your new wizards. In order to setup or edit the wizard, open Workflow Settings of the Orthor Control Panel. The following image shows 3 pre-made wizards set up in the Ortho Control Panel.



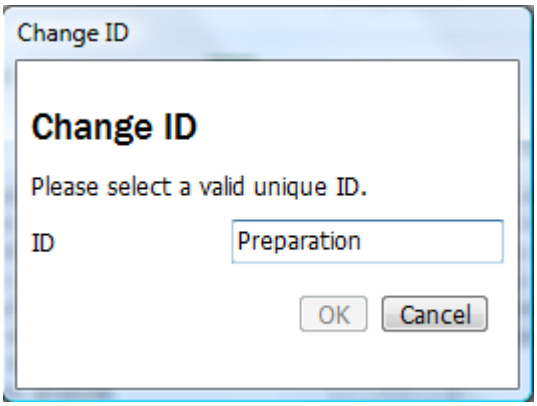


- **Adding a new wizard**

When creating a new wizard, click the ***Add*** button to add the wizard ID in the appeared *Selection of ID* window.

Once the new wizard is added it appears in the *Workflow* list on the left. Inactive wizards can be hidden from the list by selecting the required wizard and ticking the *Hide inactive items* checkbox.

All available steps of a wizard are shown under *All steps* listing while the wizard remains selected.



Select the required steps for the created wizard and transfer them to the *Current workflow steps* list on the right with the >> button.

Use the << button to remove the selected steps from the *Current workflow steps* list if needed.

The customized workflow wizard name can be edited by selecting it from the *Workflow* list and clicking the ***Change ID*** button.

You can specify color of the selected wizard by clicking the *Workflow color* cube and selecting the desired color from the available palette.

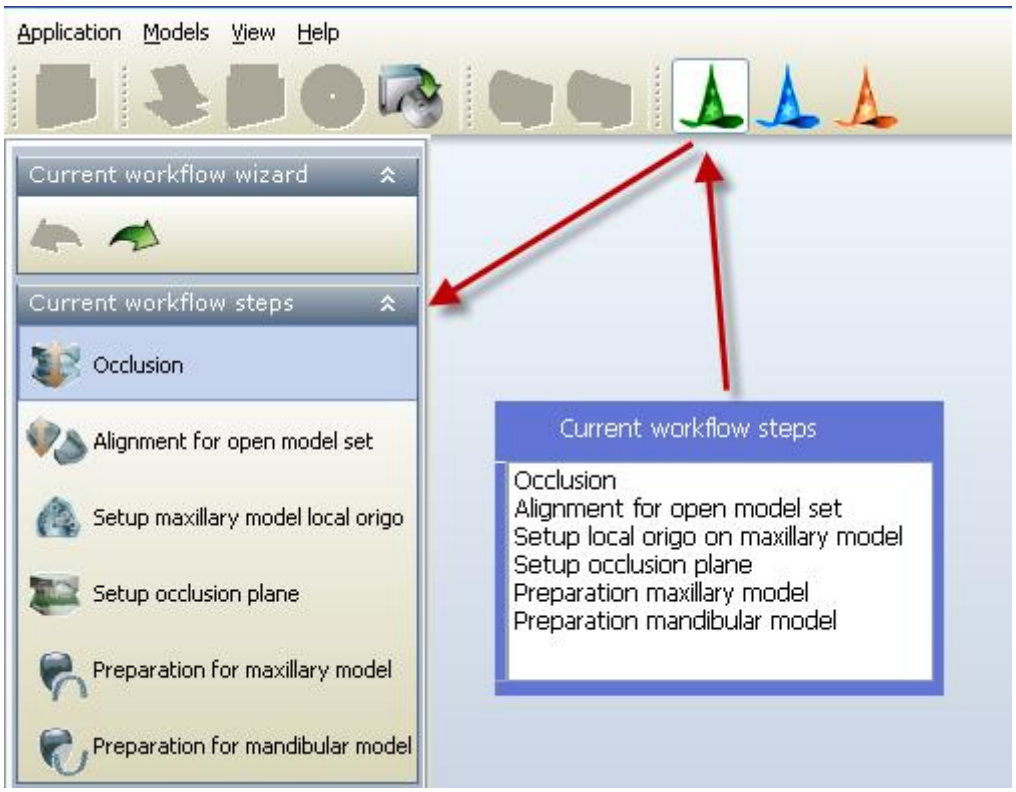
- **Other operations**

With the other operations you can ***Copy, Delete, Move up*** and ***Move down*** the selected wizards. The deleted wizards are kept in the Recycle bin. You can either restore them or empty the Recycle bin.

The ***Export*** and ***Import*** buttons allow you to easily export or import your wizard settings to/from a *.3ml file.

Click the ***Save*** button at the top of the window to save your changes in the Ortho Control Panel.

Only the sequence of steps defined for the wizard in the Ortho Control Panel appears in the OrthoAnalyzer interface on the wizard icon selection. The following image shows the operational steps of the default **Preparation** wizard in the Ortho Control Panel and OrthoAnalyzer interface.



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